NEURASTHENIA
or
Nervous Exhaustion

Don't Worry — Cheer Up

Worry wears worse than work.

Worry destroys, work produces.

Worry wastes energy, work utilizes it.

Worry subtracts, work multiplies.

Worry dwarfs, depresses, confuses, kills.

Worry stops digestion, paralyzes the bowels, slows the heart.

Worry anticipates failure and creates disaster.

Worry is a mind malady — a mental unsoundness.

Anxiety in the face of grave danger is natural and unavoidable.

Worry about petty troubles, or even big ones, is useless and may become calamitous.

Worry is often a habit and may be cured by an effort of the will.

Ofttimes worry is due to loss of sleep, tea or coffee indigestion or constipation.

Take a neutral bath at bedtime, eat biologically, abjure tea and coffee, move the bowels three times a day and—

CHEER UP.

Why The "Blues"

"Nerves", Neuralgias, and Chronic Fatigue

or

NEURASTHENIA

J. H. Kellogg, M. D., LL. D.
Superintendent of the Battle Creek Sanitarium

THIRD EDITION

Battle Creek, Michigan
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Preface to the Third Edition

First published under the title "Neurasthenia," this work has been the means of delivering so many people from the thraldom of mental depression, in common parlance, the "blues," the publishers have thought it proper to modify the title as it now appears, "Why the 'Blues'?"

The hundreds of letters of appreciation which author and publishers have received from all parts of the English speaking world afford ample evidence that the book has a real mission, and that the facts and methods set forth in its pages have "made good" in lifting men and women out of sloughs of mental and physical depression.

Biologic living is the one road out of the physical and mental quagmire into which whole populations are falling in these days of physical degeneracy. The almost universal toxemia which results from the unbiologic living and habitual constipation prevalent among all civilized people,

is without doubt one of the chief causes of race degeneracy which is undermining our modern civilization and will ultimately result in race extinction unless its destructive influence can be in some way checked.

Those who desire not only to better themselves by "right living," but to aid in the struggle for Race Betterment through Eugenics or race hygiene as well as individual hygiene or Euthenics, will be glad to possess themselves of the practical information to be found in other works by the author, "Colon Hygiene," "Auto-intoxication," "The Health Question Box," "The New Dietetics," the monthly magazine "Good Health," and other literature information about which, may be had by addressing the publishers of this work.

PUBLISHERS.

Battle Creek, October, 1921.

Preface to the Second Edition

The "people are destroyed for lack of knowledge" today as truly as in the days of the old prophet, who recognized in ignorance the greatest enemy of all human interests. Ignorance of those vital facts which pertain to the health and efficiency of the human body is the most deadly of all forms of misinformation or lack of information; and for this fact and its unhappy consequences, seen in the growing multitude of invalids and semi-invalids which fill our hospitals and swell the mortality lists, the chief responsibility lies, very strangely, with two most enlightened and most beneficent professions, teachers and physicians.

Medieval ideas of culture have kept the teachers' eyes fixed upon the minor objects of education, and the larger and worthier needs of the child and the public have been overlooked. Ancient notions of professional dignity and superiority have led the medical fraternity to hold its knowledge under the

cover of professional secrecy, and so the people have continued to perish for lack of knowledge.

The ignorance which exists even among men and women of wealth and culture, in relation to the simplest medical facts and the most patent principles of hygiene, alone has made possible the accumulation of vast fortunes by patent-medicine venders, and the enormous prosperity of mind-curists, faith-curists, and other pseudo-medical cults, which the last quarter of a century has witnessed.

But a new day is dawning. The time has come when a reform is called for. Educators, physicians, sanitarians—thinking men of all classes—see the need of giving more attention to those subjects which best prepare the student for the life he is to lead. Educational models and ideals are being modified, and great changes will doubtless be made in the next few decades.

Dr. Abraham Jacobi, Ex-President of the American Medical Association, and one of the most eminent physicians of this country, in an address before one of the sections of

the International Congress on Tuberculosis, took strong ground upon the question of popular medical education. Doctor Jacobi said:

"Indeed, medicine must become a popular science—not the cheap medicine of the sensational penny-a-liner, but the fertilizing knowledge of basic truths in physiology and applied hygiene. In this new century, universal ignorance of any people or any race, even the white, should be esteemed an intolerable scandal, as it surely leads to poverty and anarchy. Do not tell me that it has been said that half-knowledge is the most detrimental thing. It is not half-knowledge that engenders superstition and lynching, and sectarianism and faith-cures—they originate from the same depth of darkness—it is total ignorance. As long as medical science will not enlighten the masses with its fundamental principles, it has failed in its most vital vocation. The simplest facts of medicine should be taught in schools, from platforms, the pulpits, and last, but by no means least, in newspapers."

For more than forty years the writer has held the views so forcibly set forth by Doctor Jacobi, and has sought to contribute something toward the popularization of practical medical knowledge; and it is with this motive that this little work is now presented to the public.

Although less than a year has elapsed since the publication of the first edition, there is a demand for a new edition. This affords the author an opportunity for a careful revision and the addition of a chapter on "Worry—How it Kills, and How to Cure," and also a chapter on "Habits — How Formed and Reformed." Numerous other minor additions have been made which it is hoped may enhance the practical value of the work.

J. H. K.

Battle Creek, Michigan, April 20, 1915.

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NEURASTHENIA: ITS CAUSES AND CURE

THIS little book is not intended to be a technical treatise on the subject named in the title. Its real purpose is not to furnish technical information concerning this morbid condition, but rather to show to the individual who knows himself to be suffering from neurasthenia how he may escape from the miseries which he daily endures. An extensive experience in dealing with neurasthenics has shown that nervous invalids of this class are very susceptible to suggestion. Neurasthenics often acquire new symptoms as a result of reading medical books or comparing notes with other neurasthenics; hence it is thought wise to omit the long list of morbid sensations which are supposed to be characteristics of neurasthenia.

Neurasthenia Not a Distinct Disease

At the outset the author desires to call the reader's attention to the fact that, although often for convenience referred to as a disease, neurasthenia is really not a distinct malady in the sense that typhoid fever, smallpox, pulmonary tuberculosis, and pneumonia are diseases, but is rather a symptom or group of symptoms resulting from disease. Or, to speak more accurately, it is a group of symptoms which are not connected with a definite morbid condition, but which may accompany various morbid states—just as fever with its accompanying headache, rapid pulse, high temperature, hot skin and prostration is not a disease, but rather, an indication of the presence of disease, the character and seat of which may greatly vary.

The word "neurasthenia" is quite modern. It was coined by Dr. George M. Beard, an eminent neurologist of New York City, from two Greek words meaning "nerve" and "lack of energy." The writer happened to be pursuing post-graduate studies under Doctor

Beard and acting as his assistant in the department of nervous disorders at Demilt Dispensary when the Doctor was writing his early treatises on neurasthenia, and had an opportunity to become thoroughly familiar with his views of treatment, one of the characteristic features of which was the almost absolute disuse of drugs, at that time a very heretical position. Doctor Beard regarded neurasthenia as a distinct disease, but the writer soon became skeptical upon this point, notwithstanding the very general acceptance of the views of Doctor Beard in this country and Europe. Treatises on neurasthenia appeared in every language. Physicians found the new word a convenient name for all sorts of morbid nervous conditions. The disease was as popular with the laity as with the profession. Patients who had long been treated without success for "nervous prostration" were quickly cured by the same remedies applied for the cure of neurasthenia. The change of name gave new potency to old remedies. A wave of neurasthenia, so to speak, swept over the whole

civilized world and it became rather popular to be neurasthenic.

At the present time there are probably very few eminent neurologists who regard neurasthenia as a disease, and, indeed, the term neurasthenia is disappearing from standard medical literature. For many years the author has not felt himself justified in making a diagnosis of neurasthenia in any case that has been presented to him; for back of the multifarious symptoms may always be found, by careful searching, a definite morbid condition which is the real disease, and to the eradication of which the appropriate remedies must be directed.

The word neurasthenia is used in the title of this little work only because its general use during two score of years has given to it a definite meaning which cannot be so well conveyed to the lay mind by any other term. The word will probably in time disappear from medical literature, although the erroneous concept through which it originated will, like many another medical error, long survive in popular usage.

Seldom Due to Overwork

Neurasthenia is generally attributed to overwork. In the writer's experience cases of neurasthenia due to overwork are extremely rare. Indeed, the author does not feel certain that he has ever encountered a case of this sort. It is not overwork, but overcivilization and useless waste of energy in worry and in other ways that produce neurasthenia. Work is physiological. The damages which result from work, even from overwork, are readily repaired by rest and sleep, Nature's efficient remedies for the consequences of overactivity.

Every tired person is for the time being neurasthenic. His store of nerve energy is exhausted, his efficiency is impaired; but a period of rest, with a few hours' sleep, completely restores him to his normal state. This is true of a healthy man; but a neurasthenic is tired when he has not worked, perhaps even feels worse after he has slept. So it is plain that the neurasthenic is suffering from something more than overwork. His fatigue is not of a sort that is cured by rest

or sleep. He is chronically tired. What the real condition is will more clearly appear in later chapters.

Prevalence of Nervousness

It is important that neurasthenia should be understood and dealt with, for its prevalence has increased in modern times so that it has come to be, in this country at least, almost a national malady. Thousands of persons are suffering from neurasthenia who are unaware of the fact. They know that they are irritable, confused, miserable and failing in efficiency, but do not dream they are ill, and least of all do they suspect that their miseries are due to errors in habits of life which might easily be corrected.

Neurasthenia is a most demoralizing condition. It not only makes its victims wretched, but it is an affliction to their friends as well. The character changes more or less in sickness, no matter what the nature of the malady. Old Doctor Abernethy declared: "Every sick man is a rascal!" But in neurasthenia the character changes to an extent

almost beyond belief; and these changes in character, if the diseased condition is long neglected, may become habits so firmly fixed as to be eradicated only with the greatest difficulty. Said a lady in our office some years ago, while weeping and sobbing most bitterly, after having given an account of symptoms that had revealed the fact that she was exceedingly irritable, and that she scolded her husband, children, and neighbors on the slightest provocation: "Please, Doctor, tell me, am I sick, or am I wicked?'

There can be no question that many crimes, multitudes of suicides, great numbers of divorces and other social calamities may be rightfully regarded as among the natural results of neurasthenic conditions. Probably more than one poor fellow who was suffering from a fit of neurasthenia has been sent to the gallows by a judge. Wars have been declared and rivers of blood have flowed to satisfy the whims of neurasthenic kings and queens. Unquestionably our national character is undergoing a change in an unfavorable direction; if not as a result of neuras-

thenia, then as a result of causes to which neurasthenia itself is due. Ten thousand murders a year, fifteen thousand suicides, sixty thousand divorces and a steady increase of crimes of all sorts are clear indications of the moral depreciation which seems to be accelerating with each decade. Insanity is increasing at the rate of three hundred per cent in fifty years. Feeble-mindedness has doubled within a generation. According to Doctor Davenport, of the Carnegie Institute, mental defectives at the present time constitute one per cent of the entire population. The increase of neurasthenia is simply one phase of the race degeneracy which is making rapid progress in all civilized countries.

Not Hereditary

Neurasthenia is not hereditary, but an increasingly large proportion of the population is born with a predisposition to neurasthenia and other neuroses. This predisposition is, of course, not curable. It is a personal characteristic as definite and ineradicable as the color of the hair or the

eyes; but if the predisposition cannot be removed, its outward manifestations may be indefinitely postponed or altogether prevented. Probably most neurasthenics are born with a predisposition to the disease, although it is also probable that any person may become a neurasthenic if the exciting causes of this condition are applied with sufficient intensity and for a sufficient length of time.

The remedies suggested in this book as a means by which neurasthenia may be cured, if applied by a well person born with a predisposition to neurasthenia, may altogether prevent the appearance of the disease. Neurasthenia is practically always due to unnatural habits of life. It may most often be traced to errors in diet or other departures from the physiologic laws which govern man's physical being.

Neurasthenia is simply a state of exhaustion of the vital resources, the result of neglecting to conform to the great biologic laws which have control over the functions of the mind and body, just as the law of gravitation controls the movement of the planets. While

recognizing the immutability of the laws of the inanimate world and of the natural principles which govern animal and vegetable life, man treats himself as an exception to all other living things and beings, and has undertaken to assert superiority over the biologic laws which govern his species, and to establish an order prompted by his own fickle fancy. The results of this ignoring of natural laws and principles have been accumulating during many ages, and are now showing themselves in exaggerated form in a widespread degeneracy which in recent years has attracted the attention of intelligent and thoughtful people in all parts of the civilized world. An immense amount of important data bearing on this question was brought out in the first Race Betterment Conference held at Battle Creek in January, 1914.

The Return-to-Nature Cure

Neurasthenia is only one of the consequences of our wide digression from the path of physical rectitude. The cure of neurasthenia consists in returning to Nature

and in the cultivation of the simple life. It is believed that an intelligent application of the simple but thoroughgoing measures suggested in this little work will be found efficient, not only as a means of preventing neurasthenia in those with a predisposition to this condition, but in the cure of every neurasthenic who is not so far depreciated by his disease that he is no longer able to follow a definite or restricted course of life. It is just to the measures suggested to say that they are not experimental, but have been successfully employed in the treatment of many thousands of neurasthenics. During the last forty years the writer has been constantly dealing with this class of patients, and by the use of the methods herein recommended has seen many thousands who have been for many years crippled, or completely disabled by neurasthenic conditions, restored to a fair, often excellent, state of health and usefulness. The improvement has been in some instances so rapid as to seem almost miraculous, and the transformation has been so

complete and wonderful as to be a great surprise to the patient and his friends.

Lastly, it should be said that it is not the purpose of the author in the presentation of this book to offer in any case a substitute for the wise physician, but rather to supply to the physician an aid and ally in dealing with his neurasthenic patient. What the neurasthenic can do for himself is of much greater importance than what his physician can do for him. It is the aim of this book to point out to the victim of neurasthenia what he can do for himself in working out the problem of his recovery in cooperation with his physician.

The Brain and Nerves

To be able to appreciate the value of the rational method of preventing and curing neurasthenia, it is essential to have in mind at the beginning, the fundamental facts of the anatomy and physiology of the brain and nerves.

The brain is a community of thinking cells. The spinal cord is an extension of the brain into the bony canal of the spine. The nerves are simply extensions of the brain and spinal cord into the body at large. The spinal cord and nerves, which are extensions of the brain, and are technically known as the central nervous system, thus occupy the whole body, just as do the blood-vessels, which are simply extensions of the heart.

Sensibility without Nerves

The lowest animal form is a single cell. Such an animal, as an ameba, for example, possesses in a general way the characteristic

functions of higher animals, without the special organs by which these functions are performed in higher animals. The ameba has no ears, eyes, nose or other sense organs, yet it is keenly sensitive. It seems to be able to feel, taste, and smell, although it appears even under the most powerful microscope to be simply a living jelly drop without a bodily structure at all resembling that of higher animals.

The ameba has no muscles, yet it contracts. It has no arms, legs, fins, or wings, yet it has the faculty of locomotion. It has no stomach, yet it digests; no liver, yet it excretes; no lungs, yet it breathes; no brain, yet it manifests marvelous intelligence or instinct. The one simple cell performs all the duties of brain, stomach, muscle, liver, lungs, and special senses.

Higher animals are communities of cells divided into groups, each of which is charged with some special function, like the specialists who follow particular vocations in a civic community: cells which make a specialty of contracting are associated together to form

the muscular system; cells which excrete form the kidneys, liver or skin; cells which think and feel—the brain and nerves.

The Brain and Nerve Cells—The Neuron

It is scarcely a score of years since the structure of the brain and nerves has been understood. The wonderful discoveries of Cajal, a Spanish physiologist, unraveled mysteries which had baffled the wisest scholars and philosophers for ages. We now know that the brain and nerves are composed of cells of most extraordinary forms and properties, each of which is known as a neuron.

The neuron is the unit of the nervous system. A neuron consists of three parts: a body, arms or branches known as "dendrites," and one very long arm called the "axon."

A nerve cell is strictly comparable to a small battery or a battery cell. In its body is generated nerve energy, much as a battery cell or a dynamo generates electricity. The axon conducts the nerve energy as a wire con-

ducts electricity. The dendrites are receiving organs, like the antennæ of the wireless apparatus. The dendrites of one cell form contacts with one or more axons of other cells. A nerve cell is also comparable to a central telephone station; it both receives and sends out messages. It differs from a telephone station essentially in the fact that while it may receive messages from many directions through its numerous branching dendrites, it has but one wire on which to send out its messages. But this one wire may make contacts with many different cells.

The neurons of the brain and cord are gathered in groups which are called ganglia, or nerve centers, each of which is charged with some special function. Every important organ and function of the body has its governing nerve center. Even each individual group of muscles is represented by a controlling "motor center" at the surface of the brain. Control is for the most part effected through the axons which pass from the brain to neurons in the cord, and from

A Neuron, or Nerve Cell

Rested Cell

Fatigued Cell

NERVE CELLS

the neurons of the cord, axons are sent to the individual muscles and other organs.

The various nerve centers of the brain and cord are connected by axons, which thus associate and unify the action of the several centers. The structure of the brain has been so carefully studied that the function of every part is now pretty definitely known, so that any diseased condition of the brain may generally be discovered by means of accompanying disturbances in distant related parts.

Nerve Energy

The energy generated by nerve cells was once supposed to be identical with electricity, but it is now known that this is not true. Nerve energy travels much more slowly than does electricity. The rate at which a nerve impulse travels is only about one hundred feet a second, whereas electricity travels at the rate of 280,000 miles a second, or nearly a billion times as fast.

Nerve energy differs from electricity in another important particular. Electricity will travel on any moist or metallic substance. Nerve force will travel on nothing but nerves,

—axons or neurons. If a nerve is cut, the current of nerve energy is at once interrupted and is not restored, even if the ends are pressed together ever so closely. The nerve conductor is restored only by actual repair and restoration of the continuity of the living conducting path. Electricity, on the other hand, requires only a good contact to insure conduction.

The source of nerve energy in the cell has been shown to be certain minute granules known as energy granules, which represent stored-up energy that has been gathered from the food materials circulating in the blood stream.

Mental Activity

Science has not yet fully solved the mystery of mind, and probably never will, but it is known that certain parts of the brain, particularly the surface of the front and middle portions of the cerebrum, are specially concerned in conscious mental activity. Various other groups of cells are charged with the duty of storing up impressions received through the senses. By means of the axons

and dendrites these various groups are connected. Through the relations thus formed, ideas are developed, and thoughts and concepts are formed.

Mental energy, like nerve energy, of which it is only one form, depends upon the energy granules stored up in the cells.

Mental capacity depends upon the number of brain cells and the number of groupings formed by connecting, or so-called "association," fibres.

Cell Quality

Mental efficiency depends upon cell quality as well as cell numbers. Cells which are lacking in energy granules, or which are unable to make use of their stores of energy, will function badly—just as a battery may be weak, either because it is nearly run down and needs to have its elements renewed, or because it is short-circuited, so that its energy is being used up in consuming the battery itself instead of being available for useful work.

A neurasthenic may be in a condition resembling a run-down battery, or his state may be comparable to that of a short-circuited

battery in which there may be a great expenditure of energy without the accomplishment of any useful work.

The Finest Instrument Known to Man

The human brain is no doubt the finest instrument which is known to man. By means of this marvelous structure the simple inanimate food we swallow today may be so metamorphosed and transfigured as tomorrow to be thinking, talking and walking. This wonderful thinking mechanism, with its hundred billion cells and millions of groupings, requires for its perfect working the finest adjustment of essential conditions. Just the right amount of blood from the heart, the proper supply of oxygen from the lungs, the right amount and kind of nutriment from the stomach and intestine, the constant removal of waste products by the blood and lymph, the necessary repair of worn parts by adequate rest and sleep—these are a few of the conditions essential for healthful, forceful brain activity. How seldom are these conditions perfectly realized!

Chronic Fatigue — Nervous Prostration

As explained in the preceding chapter, a nerve cell generates nerve energy, just as a battery cell generates electricity. When examined under a microscope, a healthy nerve cell is seen to contain a number of minute, glistening granules. Certain coloring matters are readily taken up by these granules so that they may be made easily visible under the microscope, and thus their number readily estimated. Professor Hodge, an eminent physiologist, has demonstrated by a minute study of the nerve cells of swallows, that there is a great loss of cell substance after the bird has been for hours active on the wing. These observations, with numerous others, have definitely proved that the granules represent stored energy. That is, they consist of material which the cell uses in producing the energy which it sends out along its axon to other cells, or to the various organs and structures

of the body. Thus a cell through its activity consumes itself, just as a battery uses up the elements of which it is composed. The exhausted cell is diminished in size, and it has a much smaller number of energy granules than does the rested cell.

It is evident, then, that the amount of energy which a cell can manifest depends first of all upon the amount of energy which it has in store. A cell which is well filled with energy granules is capable of a much greater output of energy than a cell that is half empty of its granules; just as a battery that has been freshly renewed is capable of sending out a larger amount of current than a battery which is half run down. The nerve cell which has used up its store of energy so that its output is very small, or has ceased altogether, is in a state of partial or complete exhaustion.

But there must be other causes of fatigue, for it frequently occurs that a person who seems completely exhausted, will after a few moments' rest seem to be quite fresh again and able to resume activity. The time which has elapsed in the interval of rest has been

too short to permit the cell to recruit restored energy to any considerable degree; hence, there must be some other influence at work.

What the Laboratory Shows about Fatigued Muscles

Laboratory experiments have demonstrated that an exhausted muscle may be completely rested by simply washing it, showing that the exhausted muscle contains some element, the removal of which restores the ability of the muscle to work. It has been noted, also, that if the muscles of the legs are worked to the extent of exhaustion the arms also become tired, even though they have taken no part in the work. Professor Ranke found that an extract prepared from exhausted frog muscles produced fatigue when introduced into the circulation of fresh muscles. These experiments have led to the conclusion that poisons result from the activities of the cell. These fatigue poisons lessen the cell's working power. If they are removed by the blood and lymph as rapidly as formed, they do not produce the sensa-

tion of fatigue. In experiments on muscles it is found that if an interval of ten seconds is permitted to elapse after each movement, the same movement may be repeated for a very long time without fatigue; whereas without the interval, fatigue occurs in a very short time.

Various other factors contribute to the production of fatigue. For example, a person who could walk several miles without serious fatigue might find himself completely tired out by walking the steel rail of a railroad track for half an hour. The close attention and constant muscular effort required to maintain one's balance while walking on a narrow base are the cause of the greater exhaustion in this case. Simple mental tasks which may be performed with very little effort or without fatigue under favorable conditions, such as the adding of a column of figures, often become very exhausting when done under unfavorable conditions, as amid distracting surroundings or constant interruptions. An attempt to work when the mind is preoccupied with some insistent idea which cannot be

put aside, is most exhausting. The intruding ideas act like a brake upon the wheels of the mind, diverting the attention and compelling the expenditure of an undue amount of energy for the accomplishment of the work in hand. Such a person is like a short-circuited battery. The brain energy is consumed in internal work, so that little is available for useful activity. It is thus apparent that working ability depends, not only upon the possession by the brain cells of a sufficient store of energy, but upon a variety of other conditions which must be favorably controlled in order to secure the highest degree of efficiency.

To give the nerve cells an opportunity to renew their energy granules, adequate rest and sleep are essential, as the cell can accumulate energy only when the intake exceeds the output. In order that the working cell may maintain its activity it must be constantly bathed with blood rich in oxygen, so that the waste products of its activity may become oxidized and eliminated as they are formed, thus preventing the accumulation of fatigue

poisons. Every one has at some time experienced the refreshing effect of a half hour's walk in the fresh air, after several hours of taxing mental work.

Depression Resulting from Excessive Heat

A condition which closely resembles fatigue is the depression which results from excessive heat. The direct effect of heat upon living cells is stimulation. Heat, like cold, is an excitant, but the effect upon the general nervous system of the exposure of the body to heat in an overheated atmosphere, or a prolonged hot bath, is highly depressing. An experiment made by the author several years ago shows that this effect of heat, which closely resembles a condition of fatigue, may be quickly overcome by cold applications. The strength of a vigorous, healthy man was tested with the universal dynamometer and was found to be, in the aggregate, 6,000 pounds. A hot bath was administered for half an hour, at the end of which time the subject was very weak. The strength tests were repeated, and although the subject ex-

erted himself to the utmost, the total was found to be only five thousand pounds, or sixteen per cent less than before the bath. A cold shower was then applied for three or four minutes, at the end of which time the strength was again tested and the total now found to be six thousand one hundred pounds, or more than at the beginning of the experiment. This experiment showed very well the power of cold in neutralizing the effects of fatigue when due to causes other than actual exhaustion of the stores of energy in the nerve centers. It also illustrates the depressing effects of heat, and explains the weakness and exhaustion from which many neurasthenics suffer on hot days, or during long spells of warm weather. The neurasthenic is often very susceptible to weather changes.

Overwork Not a Frequent Cause

The state of chronic fatigue may possibly be due to overwork, although in the writer's experience this cause is much less frequently in evidence than is generally supposed. The

neurasthenic is generally told he has overworked. "Broken down from overwork" is the most frequent diagnosis in neurasthenic cases.

A careful inquiry into all the conditions of life and all influences in operation will, in nearly every case, show other and far more potent causes for the production of a neurasthenic state than excessive work. Insufficiency of sleep, or sleep in a hot, unventilated room, or amid noise or other unfavorable conditions, may easily become a cause of neurasthenia.

Insufficient Nourishment

Insufficiency of food is another cause of neurasthenia occasionally encountered in this country, though less common than in some others. Like all other body structures, nerve cells derive their stores of energy from food. It is evident that deficiency of food must deprive the cells of their supplies of energy material, and so must lead to lack of endurance and to chronic fatigue. While this is true, there is no ground for the widely en-

tertained belief that flesh foods, eggs, fish, and other foodstuffs which are rich in animal protein, are especially necessary to make good a loss of nervous energy. The truth is the very opposite.

Experiments of Von Noorden, Lusk, Zuntz, and others, have shown beyond any room for doubt that nitrogenous foodstuffs—that is, foods rich in protein or albumin—abnormally exhaust the energy centers and so lead to a great waste of energy. The evidence afforded by the latest scientific studies of this subject goes to show that, while a small amount of protein is necessary for the building up of nerve tissues as well as other tissues, it is the fats and carbohydrates (that is, starches and sugars), with the organic salts found in cereals and vegetables, that are of first importance in replenishing nervous energy. The brain, like the muscles, requires fuel to support its activities. The fats and starches offer the best fuel foods, while protein or nitrogenous substances are an inferior source of energy, whether nervous or muscular; and their use in excess of the amounts

needed for tissue repair, is accompanied by loss of energy and other still more serious inconveniences.

Worry a Mental Short-Circuiting

Worry is a sort of mental short-circuiting which rapidly exhausts the nerve centers, draining them of their energy and unfitting the body for useful effort. Experiments with the plethysmograph have demonstrated that depressing emotions are far more powerful causes of wear and tear to nerve centers than is healthy brain work. According to Mosso's observations, the effect of vigorous intellectual activity upon the brain is far less than that of a disturbing emotion. Mental work, combined with worry and anxiety, tears down the nerve centers, exhausts their stores of energy, and cripples their ability to recuperate; but it is not the work itself which does the mischief; it is the cross-fire, the short-circuit, the confusing and harassing influence of disturbing emotions, which exhaust the nerve forces and prevent the brain from repairing its losses.

Mental diversion and a favorable psycho-

logical environment are unquestionably of importance in the treatment of neurasthenics. But this is not all, however; back of the psychic disturbances generally lie real physical disorders which a patient is more or less powerless to resist. This is illustrated by a story told of the famous Doctor Abernethy, a leading London physician in the early part of the last century. Being consulted one day by a most woe-be-gone and melancholy patient, he said: "You need diversion, sir. Go to hear Grimaldi"—a famous French humorist who was at the time convulsing great London audiences with his wit. "Alas," said the patient, "I am Grimaldi."

Exhaustion from Insomnia

A person who is the victim of chronic fatigue often suffers from insomnia. He never sleeps soundly, is awakened by slight noises, and when he does sleep he is agitated by frightful or depressing dreams from which he often awakens in a state of profound agitation, and with a sense of great exhaustion. Such persons often rise in the

morning feeling less refreshed than when they retired the night before. In fact, morning depression and wretchedness are common symptoms in neurasthenics.

Mental confusion, loss of memory, inability to concentrate the mind, indecision and other neurasthenic symptoms often disappear as evening approaches, only to reappear again on the following morning. Neurasthenics of this class are almost invariably found to be suffering from insufficient elimination. A coated tongue and a bad breath indicate a state of chronic toxemia. During sleep the action of the heart, lungs, kidneys, and other eliminating organs, is diminished to a marked degree; in consequence there is during the night an accumulation of waste and toxic substances which befog the brain, cripple the nerve cells, and give rise to the aggravation of miseries which these patients experience.

Not a few neurasthenics, on the other hand, find themselves feeling quite well in the morning and are able to endure an hour or two of active work; then comes an over-

powering sense of fatigue that unfits them for any further work during the day.

The Influence of Occupation

With some the inability to work manifests itself only in relation to certain occupations, usually those to which the subject has long been accustomed, and which seem to have induced over-exhaustion of certain portions or faculties of the brain. In such cases, change of occupation will sometimes apparently effect a complete cure, although the effects may be only temporary.

Certain neurasthenics are exhausted by use of the eyes in reading or other fine work. Others are chiefly fatigued by the use of the arms, while others find it impossible to walk more than a short distance without a sense of complete exhaustion. These different forms of neurasthenia do not differ essentially in character, but rather in the special way in which the morbid condition present is manifested.

The writer considers it important that the popular idea that neurasthenia is due to over-

work should be vigorously combated. Unfortunately, this idea has been generally entertained by the medical profession as well as by the laity.

Excessive and prolonged activity of the brain may be followed by neurasthenia; but the result cannot be fairly attributed to work. This view has been firmly held by the writer for very many years, and in support thereof we are able to quote Doctors Proust and Ballet, two eminent French physicians, who, in their recent excellent work on neurasthenia, state that "intellectual work is one of the least formidable causes of neurasthenia;" adding, "The man who, without anxiety, without other care than that of research, gives himself up even passionately to speculative studies, is but slightly exposed to fall into neurasthenia. If he bring too lively an ardor to his work, or if he prolong his exertions beyond measure, the result will be a state of fatigue more or less profound, according to the degree of resistance of his brain, and nothing more. Fatigue, and the embarrassment of cerebral activity that fol-

lows it, will of themselves put an end to this over-pressure, or will at least restrain it within just bounds; the nervous exhaustion that may result from it will in such a case be speedily reparable. We venture to affirm, then, that apart from very rare exceptions, intellectual overwork properly so-called is incapable of engendering a persistent neurasthenia; provided always that hereditary defects or depressing emotions do not come, as most often happens, to add their pernicious influence to the excess of intellectual work."

Neurasthenia a Disease of Sedentary Life

The fact that neurasthenia is especially a disease of sedentary life is very well shown in the following statistical table prepared by Doctors Proust and Ballet:

Among 604 neurasthenics were found:

Merchants and manufacturers	198
Clerks	130
Professors and teachers	68
Students	56
Officers	38
Artists	33

Without profession	19
Medical men	17
Agriculturists	17
Clergy	10
Men of science and learning	6
Schoolboys	6
Working men	6

That muscular work, even excessive, is not a common cause of chronic neurasthenia is clearly shown by clinical experience. The above table shows only one neurasthenic from the working class, to more than a hundred from men leading sedentary lives.

Neurasthenics appear to be by far more numerous among the educated and so-called refined classes. Teachers, clergymen, lawyers, physicians, and other professional men, are much more subject to neurasthenia than are farmers and others whose vocations require a considerable degree of muscular exertion.

While women perhaps suffer more frequently from splanchnic neurasthenia than do men, on account of their improper mode of dress and neglect of muscular development,

men, on the whole, are more subject to neurasthenia than women.

Von Hossling noted that of 828 neurasthenic patients 604 were men, and 224, or a little more than one-fourth, were women. The causes which give rise to neurasthenia in men more frequently produce hysteria in women.

Neurasthenic Boys and Girls

Neurasthenia often begins in childhood. Multitudes of children are made neurasthenic by wrong methods in education, especially by the neglect of physical development, and by improper discipline in the school or in the home. Doubtless most of these young neurasthenics are predisposed to neuroses by heredity. The proportion of such children to the total school population is unquestionably increasing. It is consequently of the highest importance that preventive measures should be applied at an early period, and especially that influences calculated to develop the neurasthenic tendency should be suppressed.

Children predisposed to neurasthenia should be brought up from the very start in strict harmony with simple life principles. Diet, clothing, sleep, and exercise, should all be regulated with the most careful regard for the physical needs of the child. Meats, condiments, tea, coffee, pastry and confectionery, for which things neurasthenic children are especially likely to acquire a fondness, should be strictly withheld. The child should spend every possible moment of his life in the open air, and should sleep in a fresh-air sleeping room at all seasons of the year. Neurasthenic children need the benefit of the open-air school as much as do tubercular children, and they profit as greatly by it.

Neurasthenic children have a special tendency to the formation of perverse sexual habits, often at a very early age, even in the years of infancy; hence, very special attention should be given to careful supervision in this regard. There is no doubt that by sufficiently thorough and careful training, children who are known to be burdened by heredity with a neurasthenic tendency, may

by education be able to form new habits and to develop new instincts, which will balance and neutralize their ancestral traits and tendencies, and thus prevent any development of disease.

The Question of Heredity Important

The educator of the future will make a study of the child's heredity as much a matter of concern as observation of the child himself. It is only, indeed, by a knowledge of the character of the child's hereditary endowment, that the teacher can really understand the nature of the problem which it is his duty to solve.

Our educational methods at the present time are exceedingly crude, and take almost no account of individual requirements. They are largely modeled upon false psychologic theories. A small beginning in the direction of better methods has been made in the establishment of special classes for backward and defective children. The study of defectives has developed such a rich fund of facts and principles relating to child psychology

and mental growth, that the time cannot be far distant when the average and so-called normal child will, by the application of these facts and principles, enjoy opportunity for acquiring through education advantages which are not even contemplated in our present system of school training.

Our public school system, though perhaps the best in the world, is only a sort of educational ladder which leads from the kindergarten to the university; the chief purpose of the university, until recent times at least, being to create a sort of aristocracy of learned men whose duty it will be "to conserve learning."

Educational reformers insist that the aim of the school and the university should be not simply to impart learning, but to give the child such a training as will prepare him to enter upon life. In a proper sense, this latter aim may be broad enough to include all the child's requirements; but not without the recognition of the fact that one of the most important of these requirements is protection against the various evil tendencies, physical,

mental, and moral, which have been transmitted to him from his parents.

Race degeneracy has attained such proportions that the pathological element is becoming predominant. Medical inspection of schools, carried out in a most extensive way in various countries, has shown that fully seventy-five per cent of all children of school age present serious physical or mental defects. In many communities the proportion is very much higher than this.

The correction of these defects must be recognized as one of the special and most important functions of the school. No system of education can be considered complete which does not provide in every grade, from the kindergarten to the university, efficient means for detecting and combating ancestral tendencies of an undesirable sort.

Nesteroff found, in a school numbering six hundred pupils, thirty per cent showing symptoms of neurasthenia, such as persistent headache, insomnia, palpitation, sudden neuralgic pains, etc.

A very significant fact noted by Nesteroff

is the increase of the proportion of neurasthenics with each advancing grade. For example, he found in the classes of a secondary school the following proportion of neurasthenic children in the several grades:

Preparatory class	.....	8	per cent
First	"	15	"
Second	"	22	"
Third	"	28	"
Fourth	"	44	"
Fifth	"	47	"
Sixth	"	58	"
Seventh	"	64	"
Eighth	"	89	"

Toxic Neurasthenia

In by far the great majority of neurasthenics, the disorder is simply one of many manifestations of a chronic toxemia that may be of various origins, or derived from several causes combined, the condition being expressed by the term "toxic neurasthenia." Chronic toxemia is, in fact, a dominant factor in nearly all cases of neurasthenia, either as a primary or a secondary cause.

The poisons to which chronic toxemia is due may be derived from one or all of the following sources: (1) The tissues; (2) food; (3) intestines.

Toxemia from Tissue Activities

The world owes to the late Professor Bouchard, the great French physiologist, the formulation of the important truth that the body is a factory of poisons. Animal life is a vital flame. A constant burning is taking place in the tissues—an oxidation or combustion, in which the food plays the part of fuel.

It is this constant burning which renders necessary the taking of food at regular intervals. To support the work of the body and maintain heat requires the daily burning of the equivalent of two and a quarter pounds of bread, or ten ounces of butter, amounting to an annual consumption of more than two hundreds pounds of fat, or more than eight hundred pounds of bread.

Combustion in the body gives rise to essentially the same products as burning outside of the body. Bread or fat burned in a furnace gives rise, not only to heat, but also to smoke, ashes, and possibly imperfectly burned products. Corresponding products are formed when foods are burned in the body. Poisonous gases that are formed, especially carbondioxid, are carried off through the lungs. The soluble solid residues, the ashes, are dissolved and carried off by the kidneys. Imperfectly burned products corresponding to the cinders from coal or wood fire may be left in the tissues, where they become a source of grave mischief. The imperfect elimination of these poisons may

be a cause of toxemia, and of chronic injury to the nerve and brain cells, and consequently give rise to neurasthenia.

Tissue work makes uric acid, ammonia, and other poisons, and especially *fatigue poisons,* all of which may become a cause of chronic tire and neurasthenia.

Deficient breathing, deficient skin action, deficient liver and kidney activity, deficiency of the thyroid gland—all may lead to accumulation of tissue toxins, a real autointoxication. This condition necessarily exists in practically all adult persons who lead a very sedentary life.

The presence of chronic autointoxication is usually shown by a dingy, inactive skin, by a scanty and highly colored urine; a stooped posture is common, and there is often lack of appetite, a bad breath, coated tongue, emaciation, and an appearance of general feebleness.

Alimentary Toxemia

Another source of systemic poisoning is one's food, especially when large quantities of flesh food are eaten. Animal flesh closely

resembles human flesh. It contains the same waste elements—uric acid, urea, and other tissue poisons. Since the tissues of the slaughtered animal live for some time after the blood ceases to circulate, tissue poisons are present in beefsteak, chops and other flesh foods in much larger proportion than are ever found in living human tissues. The total of these extractives is put down by Gautier as about ten per cent of the total dried substance. Professor Hall, of Manchester, England, has shown that a pound of beef contains about fourteen grains of uric acid, while sweetbreads contain as much as seventy grains.

Tea, coffee, beer, with vinegar, pepper, mustard, and other condiments, add to the burden of toxicity, overwhelming the eliminating organs, and lead to chronic saturation of the tissues with poisons, and so to neurasthenia.

Intestinal Toxemia

The third source of poisons, the most important of all in relation to neurasthenia, is the intestines. In the intestines, especially

the colon, or large intestine, of practically all adult persons, active putrefaction processes are constantly in operation.

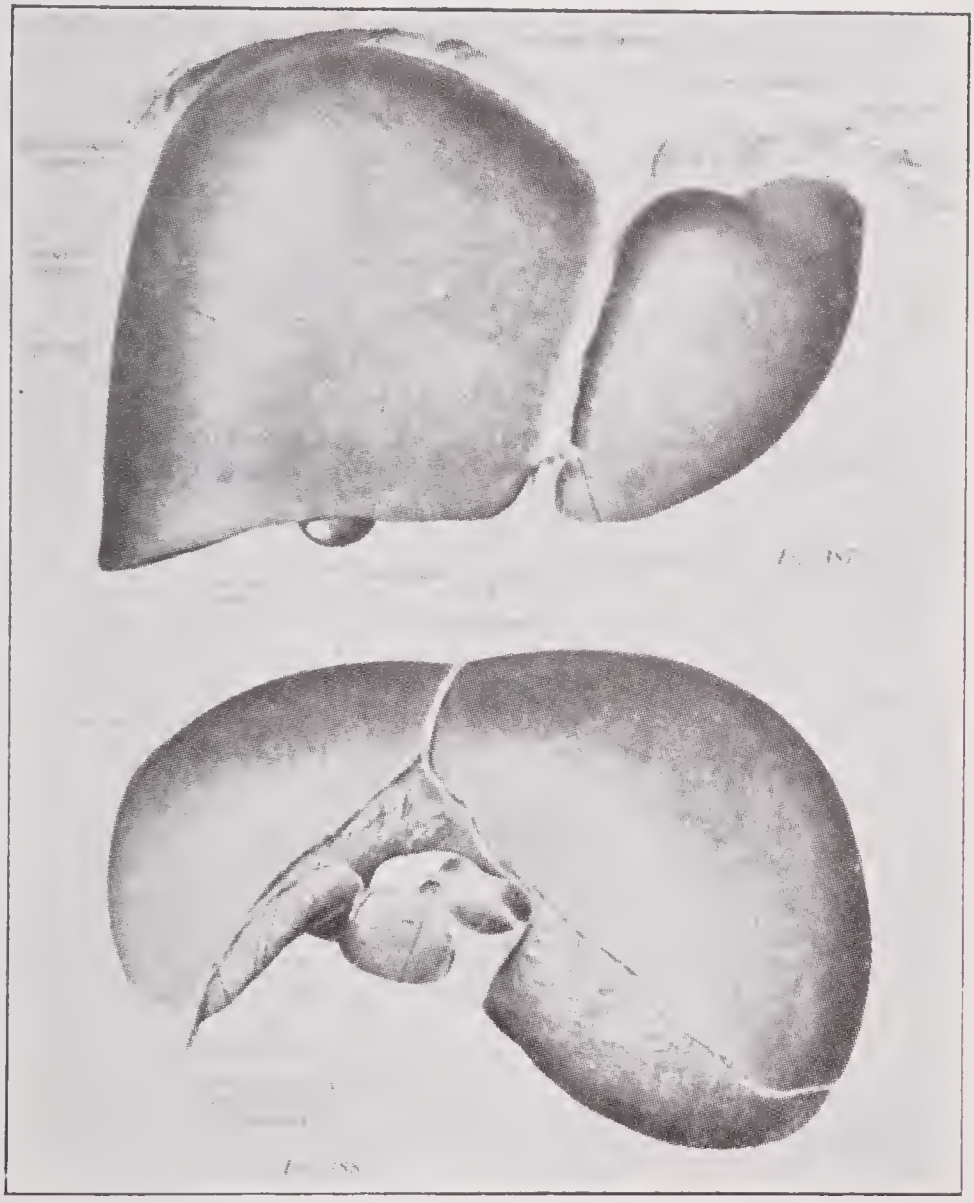
Theories innumerable have been elaborated for the explanation of the headaches, backaches, neuritis, and various paresthesias (numbness, tingling, and other strange sensations) to which neurasthenics are often veritable martyrs. The only satisfactory explanation found has been the effects of various toxic substances developed in the intestinal tract by putrefactive organisms of various sorts. Roger enumerates one hundred and sixty different species of germs which thrive in the alimentary canal. Of these, more than a third are poison-forming organisms that convert certain elements of the food, particularly the protein, or albuminous elements, into toxic substances, some of which are tox-albumins and possessed of the virulence of snake venoms. The well-known skatol and indol, which give to the fecal discharges their characteristic odor, were shown by the experiments of Herter to be productive of headaches of a most pronounced type.

Laboratory workers who have to deal with fecal discharges often suffer from headache as a result of inhaling the odors emanating from the material undergoing examination.

The headache and other discomforts arising from constipation, and the promptness with which the unpleasant symptoms are relieved by a thorough bowel movement, afford evidence of the influence of intestinal poisons in producing neurasthenic symptoms.

Constipation and Fatigue

Doctor Lee, of Columbia College, New York, has for many years devoted his energies to the study of the causes of fatigue, by means of delicate and precise methods and appliances which register the exact effect of any drug, or other substance, which may be made the subject of inquiry. Doctor Herter sent to Professor Lee specimens of pure skatol and indol to be tested for their effect in producing fatigue. Both were found to be powerful fatigue poisons. Animals submitted to their influence quickly showed the well-known symptoms which result from the fatigue poisons produced by tissue work.



The Liver

How the Body Protects Itself against Poisons

That every person suffering from constipation is not a victim of headache or neurasthenia is simply due to the fact that some persons are still able to deal with their colon poisons. The body possesses a remarkable mechanism for defense against poisons. The intestinal wall is a filter which, when intact, excludes poisons, just as the intact skin is a perfect protection against the venom of the most poisonous serpent. When the intestinal membrane becomes crippled or denuded by inflammation, as in colitis, or congested and irritated through the use of irritating condiments, or the habitual taking of laxative mineral waters or cathartic drugs, the filtering power is lost, and poisons penetrate into the blood and reach the delicate brain and nerve cells, producing their characteristic effects.

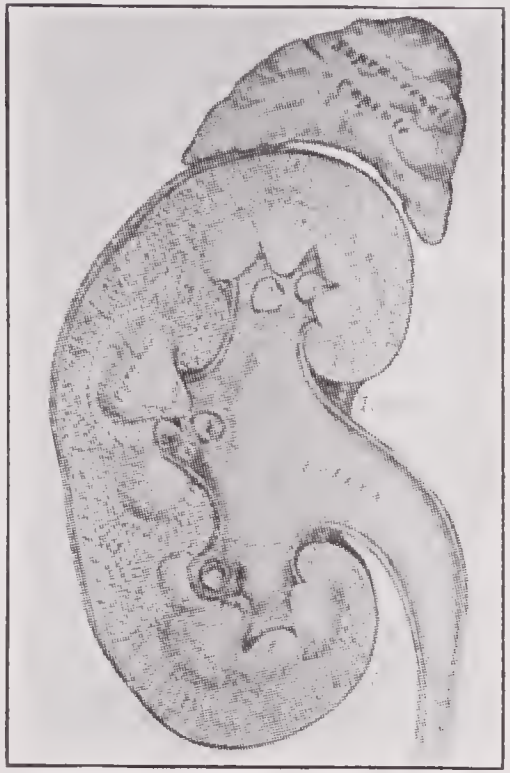
In addition to the intestinal filter, the body possesses other effective means of combating poisons. The liver is a poison-destroying organ. Poisons absorbed from the intestine

are conveyed by the portal vein to the liver, before entering the general circulation, and their toxic properties are there to a very large extent destroyed.

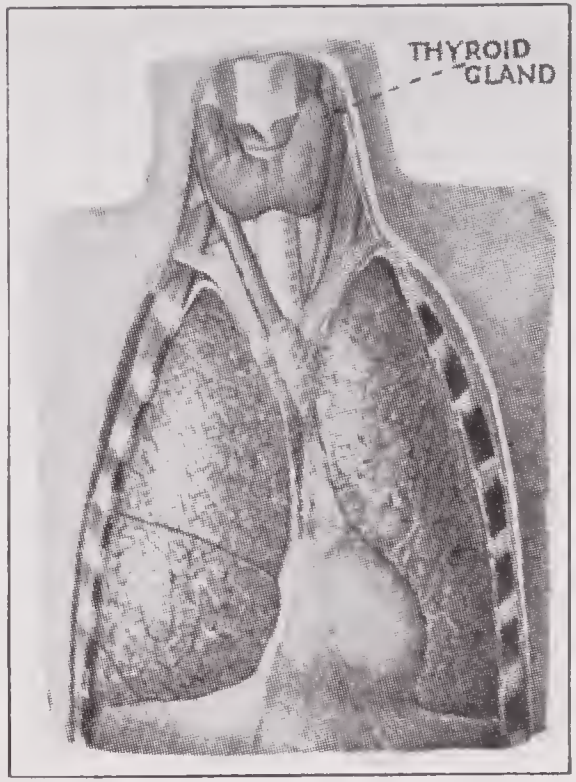
The thyroid gland, the suprarenal capsules, and doubtless other glandular structures, are also concerned in the defense of the body against intestinal poisons. The kidneys rapidly eliminate such toxic substances as have not been destroyed, as well as their detoxicated derivatives.

So long as the poison-destroying and eliminating mechanisms of the body are able to do their work efficiently, no poisonous effects are observed; but when large quantities of poisons are absorbed during long periods, as is the case with persons who are habitually constipated, the poison-destroying and poison-eliminating mechanisms break down. Then an accumulation of the toxins results, and general and local symptoms of poisoning make their appearance, often ending in neurasthenia.

A constipated child is a cross, peevish and neurasthenic child. Every up-to-date mother



A Section of the Kidney, Showing Suprarenal Capsule



The Lungs, Shewing Thyroid Gland

is acquainted with this fact and wisely applies the proper remedy. No competent nurse would think of giving a tonic or "pick-me-up" of any kind to relieve the irritability and nervous restlessness of a constipated child. The strong fecal odor of the child's breath, as well as the absence of proper bowel movements, affords indubitable evidence of the fecal intoxication from which the child is suffering, and suggests the appropriate remedy—the bowels must be relieved of their malodorous and poisonous contents. When this is done, the child quickly recovers.

How strange that so little attention is given the condition of the bowels in adults, and that headaches, languor, nervousness, and other distresses, should be attributed to a multitude of vague and occult causes, when so very tangible and sufficient a cause as a colon filled with putrefying excretions, and remnants of undigested foodstuffs, is so much in evidence!

When a doctor is called to investigate the health of an infant, he first of all examines the stool. This practice is so universal and

so well known, that the nurse or intelligent mother always has the soiled napkin ready for inspection in anticipation of the doctor's arrival. The stool of an infant should be odorless or slightly acid, and yellow in color. If the doctor finds a foul odor and a dark color, he knows without further investigation that the infant is ill. Putrefaction germs are flourishing in its colon, and it is suffering from general poisoning.

Significance of Ill-Smelling Stools

Why, then, should black, foul-smelling stools in an *adult* be regarded with indifference? Their meaning is precisely the same in an adult as in an infant. The adult becomes to a certain degree immune to the acute effects of colon poisons, but the chronic effects are in no way mitigated by the long continuance of the constipated state. Gradually the defensive powers of the body are exhausted, and there comes the accumulation of poisons and the general vital breakdown, of which neurasthenia is only a single expression. Hardening of the arteries, cirrhosis of the liver, Bright's disease, and premature

old age, are among the associated evils to which neurasthenics are subject. The same poisons which set the nerves on edge, which harass and cripple the brain; confuse the mind, upset the temper and change the character, work havoc with the delicate machinery of liver, kidneys, heart and every vital organ; and set in operation a whole train of degenerative processes which leave no bodily organ or function untouched.

The fact that a few neurasthenics attain advanced age is no contradiction of these patent facts. Some persons are endowed with constitutions that are remarkably resistant to the attacks of poisons. The life-long neurasthenic who has attained great age belongs in the same physical category with the octogenarian tobacco or whiskey devotee. He is simply an uncommonly hardy individual who, under more favorable conditions, might have enjoyed an immensely more pleasant and efficient life.

We must also remember that for every one of these long-preserved neurasthenics, there have been some thousands of others

whose careers have been cut short by Bright's disease, or arteriosclerosis, or other degenerative maladies.

It must be noted also that the long-lived chronic invalid is often little better than a preserved specimen. By extraordinary care many of the ordinary causes of premature death have been avoided, so that existence, even though crippled and narrowed, is lengthened out to an unusual term.

Foul Stools

The fact that the bowels move daily, or even more than once daily, must not be regarded as evidence that no intestinal toxemia exists. If the stools are foul smelling, this fact alone is ample evidence that active poisoning is taking place. Let the skeptical reader consider for a moment what would be the result if the foul substances discharged in a bowel movement were in some way returned into the body. Suppose even that a person were for twenty-four hours shut up in a close room with the loathsome products of a single bowel movement. What visions of

sion, and other miseries, rise at the suggestion of such a wretched experience! How much more active for evil must be the same putrefying mass when retained in the colon, and sending into the blood its flood of horrible toxins of varied sorts and potencies!

Latent Constipation

While thousands, perhaps millions, of persons are consciously suffering from constipation and constantly combating this condition by pills, mineral waters, and various irritating drugs which purchase temporary relief at the expense of worse mischief later on, a much larger number suffer from latent constipation without being in the slightest degree conscious of the fact. The bowels move daily, but are always a day or two, or even several days, in arrears. The foul character of the stools, the fecal odor of the breath, a coated tongue, foul intestinal flatus — these signs are ample evidence of the retention of putrefying materials in the colon.

Three Daily Bowel Movements Essential to Health

The bowels should move at least three times a day. A movement after each meal is the normal intestinal rhythm, with perhaps an additional movement on rising. The idea that frequent bowel movement is weakening is wholly erroneous. It is not the frequent movements of diarrhea which weaken the patient, but the bacterial poisons which occasion the diarrhea. The acquisition of the habit of tri-daily bowel movements will do more to help a victim of chronic fatigue out of his neurasthenic ruts than any other means at present known. No other change of habits produces such immediate and striking results. This is not a random remark, but a carefully considered statement, that is supported by the personal observation of results in hundreds of cases of chronic neurasthenia which had long resisted the most varied forms of treatment.

When the bowels are made to move three times a day, and are each time well emptied,

the undigested remnants of foodstuffs and intestinal excretions do not remain long enough in the colon to reach a state of advanced decomposition. Putrefaction poisons are produced only in small quantities, and still smaller amounts are absorbed. The body is at once relieved of the effects of the great flood of virulent toxins which have been daily and hourly sweeping in upon the tissues. A great handicap to the vital forces is removed. The liver, kidneys, lungs, skin, and other excretory organs, are relieved of an abnormal and most onerous burden. They are now able to devote their energies to dealing with the normal body wastes, so that the tissues are freed from both tissue poisons and intestinal toxins. Headaches, languor, depression, and bad breath disappear, along with the dark circles about the eyes and the dingy skin color; appetite returns, and life begins to seem worth living.

Incompetency of the Ileocecal Valve a Cause of Toxic Neurasthenia

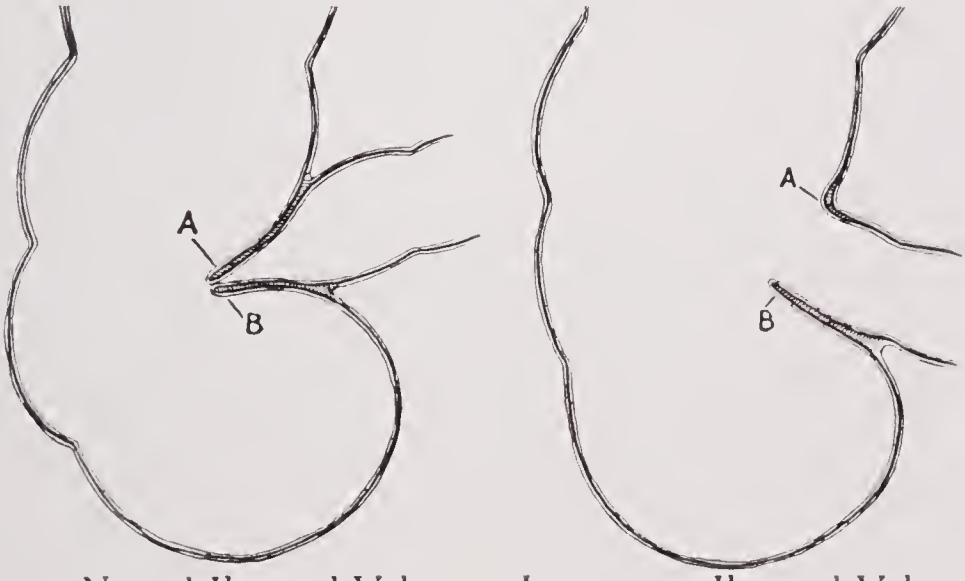
A discussion of toxic neurasthenia would not be complete without especial reference to

a cause, a very potent cause, of this condition, which has until quite recently been overlooked; namely, an incompetent condition of the ileocecal valve.

The ileocecal valve is an interesting structure placed at the junction of the small intestine with the colon, or large intestine. It consists of two parts; a circular muscle which acts as a sphincter and controls the passage of liquid material from the small intestine into the colon, and a mechanical part consisting of two membranous lips which, when the slightest back pressure occurs, fall together and cover the opening of the small intestine into the colon, thus preventing the reflux of fecal matters from the colon into the small intestine. This valve is found in practically all vertebrate animals, from which fact it is fair to infer that its function is important in the economy of animal life.

The alimentary canal of vertebrate animals is divided into three parts, known respectively as the "fore-gut," the "mid-gut," and "hind" or "end-gut." The fore-gut consists essentially of the stomach, in which

The Ileocecal Valve, as Seen from the Inside of the Colon



Normal Ileocecal Valve

Incompetent Ileocecal Valve

the preliminary work of digestion is done. The mid-gut consists of the small intestine, in which the real work of digestion is performed, and from which the digested foodstuffs are absorbed. The end-gut consists of the colon.

The Ileocecal Valve

The stomach may aptly be compared to a kitchen; the small intestine may be said to be the dining room, while the colon serves as a waste and filth receptacle. With these facts in mind, the necessity for the presence of a check valve between the colon and the small intestine is clearly evident. Normally no putrefaction takes place in the small intestine, so that indol and skatol and other products of putrefaction are not found in this part of the alimentary canal. But putrefaction of the contents of the colon is the rule in adults who subsist upon a mixed dietary. The larger the amount of albuminous substances contained in the food, —that is, the more largely the diet consists of flesh meats and eggs—the greater will be the amount of putrefaction in

the colon, especially if the action of the bowels is sluggish—and this condition is almost universally present among civilized people. So long as the ileocecal valve is intact, these putrefying materials cannot find their way back into the small intestine, and the amount of poisonous matters absorbed will be comparatively small, for the reason that the colon is better prepared to defend itself against these poisons than is the small intestine. When the ileocecal valve is incompetent, and putrefying materials find their way back into the small intestine, the body is flooded with putrefaction poisons, and most pronounced symptoms of intestinal intoxication occur. This fact was pointed out by Adolph Schmidt, an eminent German medical authority, some years ago. Still earlier, Kraus, Hertz, and others, called attention to the symptoms strongly indicative of intoxication that are found associated with incompetency of the ileocecal valve.

Within the last few years the marvelous developments in x-ray technic have made possible a very exact study of the ileocecal valve,

so that its competency or incompetency may readily be determined by special methods of testing the condition of the valve. A careful application of this test in several thousand cases, which has been made in the x-ray department of the Battle Creek Sanitarium, under the supervision of the able Roentgenologist in charge of this department, Dr. J. T. Case, has shown that incompetency of the valve exists in about one person in six of those examined; all of whom were, of course, suffering from indigestion, constipation, or some other disturbance of the stomach or intestines. A careful clinical study of several hundred persons whose valves have thus been found to be incompetent, has proved beyond chance for doubt the close association between this condition and chronic intestinal toxemia. The symptoms of toxic neurasthenia have been found almost universally present, though in a considerable number of cases the neurasthenic symptoms have been largely overshadowed by still greater difficulties; such as gall stones, duodenal ulcer, gastric ulcer, and other organic affections

which are the natural result of chronic intestinal toxemia.

The Treatment of Toxic Neurasthenia

The treatment of this condition will be dwelt upon with considerable detail for the reason that it is applicable and, in fact, fundamentally important in all cases of neurasthenia, whether recognized as toxic or placed in some other class. The fact is, it is almost impossible to find a neurasthenic who does not show evidences of autointoxication or alimentary toxemia.

Chronic poisoning is, in the opinion of the writer, the dominant factor in all cases of neurasthenia, and hence the first consideration in the treatment of these cases is to rid the body of poisons, so as to give the crippled nerve cells an opportunity to recuperate, and to repair the damages to which they have been subjected. A cell that is poisoned by putrefactive toxins from the intestine, or by retained tissue wastes, is unable to gather stores of energy from the blood like a normal cell, and may be so paralyzed that it

cannot make use of the stores of energy that it still retains.

There are three great objects to be attained in the successful treatment of cases of toxic neurasthenia: the suppression of intestinal putrefaction, increased elimination, and improved tissue building.

One of the most frequent ways in which the chronic toxemia of neurasthenia shows itself is colitis. A common form of colitis, pseudo-membranous colitis, has long been regarded as a nerve disorder. It is a very frequent accompaniment of neurasthenia, and was thought to be due to some nervous disturbance. This view was doubtless the outgrowth of the fact that this disease generally accompanies very marked neurasthenic symptoms. The truth appears to be, however, that colitis is simply another consequence of the same causes which produce neurasthenia.

Colitis is an infection of the colon due to the presence of certain micro-organisms, several varieties of which, according to Doctor Tissier, of the Pasteur Institute, are capable of producing colonic infection.

In general, the germs which produce putrefaction are capable of giving rise to this condition. The chronic intestinal toxemia which accompanies neurasthenia, a dominant factor in a majority of cases of neurasthenia, is also associated with colitis, both as a cause and a consequence. Colitis, by producing a diseased condition of the mucous membrane, lessens its ability to resist the poisons which are produced in abnormal quantities in the cavity of the intestine, since these toxic substances readily pass though the congested, irritated, or abraded mucous membrane. Colitis is, then, a cause of neurasthenia and not a result of this condition. Colitis can be cured only by changing the intestinal flora.

Changing the Intestinal Flora

Every neurasthenic needs to have his intestinal flora changed. That is, he needs to get rid of the putrefactive bacteria which are manufacturing poisons in his colon, and to replace them by harmless acid-forming bacteria, which not only protect the body by eliminating the growth of putrefactive or-

ganisms, but render important aid to bowel action by furnishing a normal stimulus to the colon by the harmless acids which they produce.

Not a Simple Task

To read the advertisements of the commercial distributers of Metchnikoff's Bulgarian milk tablets, one would imagine the change of intestinal flora to be an exceedingly simple process. No one who has ever undertaken the task of changing the flora in a case of chronic intestinal intoxication will be able to subscribe to this view. To change the flora in such cases is indeed difficult, and often a tedious process. Nevertheless, it can be done, and with sufficient patience and persevering effort it may be accomplished in every case. It cannot be done, however, without the application of the most thoroughgoing measures; and not one measure only, but many must be applied, either in succession or in combination, as the individual case may require. When the change is once accomplished, the methods by which the change has been effected must be continued

indefinitely, to prevent a return of the wild bacteria, together with the consequences which result from the absorption of the poisons which they produce.

The following account of the method of changing the intestinal flora, which has been worked out under the writer's supervision and successfully employed at the Battle Creek Sanitarium in hundreds of cases, is taken from a recent medical paper by the author:

How to Change the Intestinal Flora

Putrefaction processes are the result of the growth in the intestine of microscopic organisms, which Herter refers to as "wild" bacteria. Parasitic growths are not necessary to a state of perfect health, but are introduced by means of milk polluted with barnyard filth, flesh foods undergoing the first stages of putrefaction, stale eggs, cold storage meats, preserved fish, old cheese, and other decomposing foodstuffs.

The first thing necessary is to get rid of the wild bacteria, and to restore the normal

friendly bacteria with which Nature supplies the intestine within a few hours after birth. These bacteria are acid-forming ferments, and when present in abundant quantity, the acids which they produce prevent the development of the poison-forming bacteria, thus combating intestinal autointoxication.

Three things are essential for change of the intestinal flora:

First, increased activity of the intestine; that is, more frequent bowel movement.

Second, an anti-toxic diet; that is, the use of foods which will not undergo putrefaction in the colon.

Third, the introduction into the intestine of friendly, or acid-forming, bacteria.

We have not the space in this little volume to dwell at length upon the methods by which these three important measures may be successfully accomplished.

Briefly, the essentials may be summarized as follows:

To Increase Bowel Activity

The bowels should move after every meal, or at least three times a day. Increased

bowel activity may be encouraged by use of the following measures: (a) Increased bulk of food; (b) free use of fresh fruits and fresh vegetables; (c) regularity in relation to bowel movement; (d) special exercises to strengthen the abdominal muscles and encourage bowel activity; (e) use of the enema, with the water at 80° F.; (f) the use of Japanese sea-weed or agar-agar, commercially known as colax; of paraffin oil (a specially purified emulsion and known as para-lax which has been found useful) and of wheat bran, and other food laxatives.

The Atoxic or Anti-toxic Diet

Meats of all sorts must be discarded. In extreme cases, eggs and milk must also be omitted from the bill of fare, at least for a time. It is often most gratifying to note how quickly the tongue clears, the breath becomes sweet, headaches, depression of spirits, feeling of biliousness and other distresses disappear after the adoption of a strictly anti-toxic dietary. The advantages of the grape cure, and numerous other fruit cures, are

wholly dependent upon the anti-toxic character of these special diets. Putrefactive bacteria feed upon protein, and thrive especially well on animal protein. When animal proteins of all sorts are carefully excluded from the dietary, and when a low-protein diet is adopted, putrefactive bacteria are starved out; and nearly all the protein taken as food is digested and absorbed, leaving no residue to undergo putrefactive changes.

It is true that mucus, bile, and other intestinal secretions, may still supply material to feed the putrefactive bacteria, but certainly the intensity of the putrefactive processes in the intestine may be greatly lessened by carefully excluding from the dietary all putrescible food substances.

It should also be noted that it has been shown by Kendall, and others, that when the diet consists largely of carbohydrates, especially starch in the form of various farinaceous foodstuffs, such as rice, potato, etc., the putrefactive bacteria, even though they may be present in the intestine, do not form toxins, but act with the friendly organisms

in forming harmless acids, thus suppressing the putrefactive processes.

This observation by Kendall explains the benefit derived in many cases from the use of raw or uncooked food. As a fad, the raw diet idea has doubtless been overworked and may have done some harm, but there can be no doubt that the diet of primitive man consisted of uncooked foodstuffs, and the same is true of the big apes, man's closest relatives in the animal world. In order entirely to suppress putrefactive processes in the intestine, it is necessary to take starchy foods in such form that a considerable portion will reach the colon in an undigested state. This may be done by taking food in a raw or partially cooked state, as starch is much less readily digested when raw than when cooked.

The Scotch Highlanders prepare a dish which they call "brose," by pouring boiling water upon oatmeal and stirring it for a moment. This half-cooked cereal is a staple article of diet with the Scotch. Through its laxative and anti-toxic properties it is highly

promotive of the good health which Scotch Highlanders proverbially enjoy.

The Bulgarian Bacillus and Other Anti-toxic Ferments

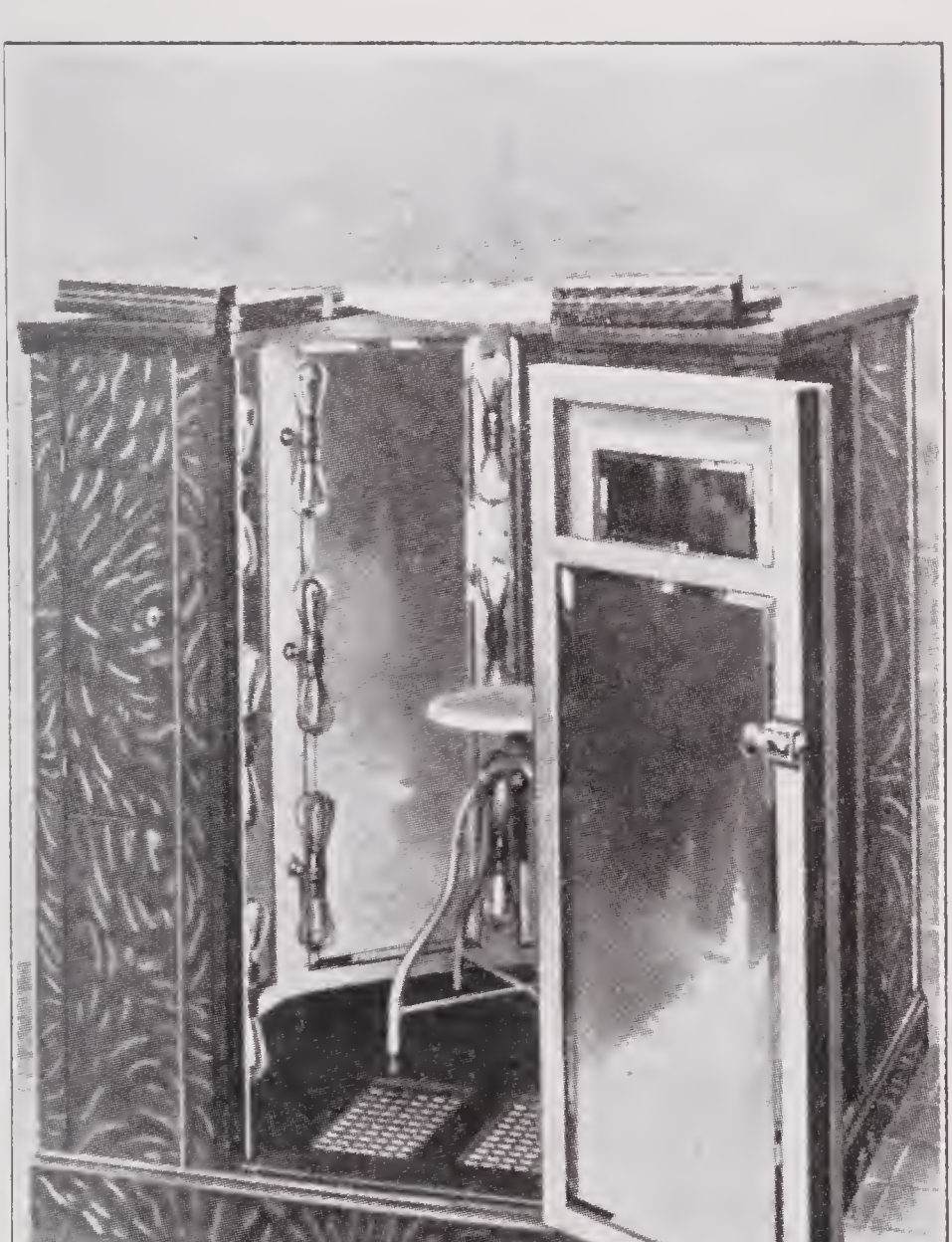
Doctor Tissier, of the Pasteur Institute, discovered the anti-toxic properties of acid-forming bacteria. Through his studies, Metchnikoff became acquainted with the value of the *Bacillus Bulgaricus* and similar organisms as a means of combating putrefactive processes in the colon. Tissier also discovered that another organism known as the *Bacillus bifidus* possesses similar properties and in a higher degree, since the *Bacillus bifidus* is a natural inhabitant of the intestine, while the *Bacillus Bulgaricus* is not. The *Bacillus bifidus* always appears in the intestine of an infant within six hours after birth in summer, and twenty in winter, and through the acids which it forms it protects the intestine from the inroads of the putrefactive organisms. The *Bacillus glycobacter,* recently discovered by Wollman, of the Pasteur Institute, promotes the growth of

Bacillus Bulgaricus and *Bacillus bifidus* by forming from starch the sugar which is essential to the growth and activity of the *Bacillus Bulgaricus* and *Bacillus bifidus.*

These friendly organisms may be taken in special cultures, and when liberally and regularly used, are found to be remarkably useful in re-establishing the normal flora of the intestine, suppressing putrefaction, and thus delivering the body from the baneful influence of the putrefactive poisons which are responsible for a long category of human ills.

Light Baths for Neurasthenics

Important eliminative work is performed by the skin, lungs and kidneys. The activity of these organs must be encouraged, and there are no better means of accomplishing this than by natural methods that increase the activity of the skin, such as the electric light bath, the sun bath and the air bath. The hot bath, the sweating pack, the steam bath, and other sweating procedures, are also useful. The electric light bath is best of all, for the reason



The Electric Light Bath

that it stimulates, in the most powerful manner, the circulation of the skin, and is susceptible to the nicest regulation. This bath, which was originated and first used by the writer more than twenty years ago (1891), is now found in all the leading hospitals of Europe and is rapidly gaining favor in this country.

The electric light cabinet also has the advantage that it may be conveniently employed in one's own home. The bath may be installed in any ordinary bath room or sleeping room, and is always ready for use at any moment.

Sweating measures should not be greatly prolonged in cases of neurasthenia, on account of the depressing effect of heat when long continued. The duration of the bath should rarely exceed fifteen minutes, and often five or six minutes is quite sufficient. The primary purpose of the bath is to start vigorous sweating. It is not desirable that the sweating be continued long enough to produce any considerable degree of depletion. The bath should be concluded by a cold

application of some sort. The cold shower douche, the wet sheet rub, the cold towel rub, or the salt glow, are all appropriate finishing measures, and are most important tonic applications.

Training the Skin

In persons who are highly sensitive to cold and do not react well to cold applications, the cooling off may be accomplished by means of the neutral bath or graduated shower. The temperature of the application begins at about 100° F., or body temperature, and is gradually cooled down to 90° or 88° F. The patient remains in the bath until the skin returns to its normal temperature; that is, until the heat absorbed from the heating bath has been wholly removed. After the bath, the patient may rest for an hour and should then feel much refreshed.

An effort should be made to train the skin to bear cold water, as by this means stronger impressions may be made upon the central nervous system, and more powerful tonic effects are secured. When the patient is able to endure strong cold treatments, the bath

should be followed by moderate exercises for half an hour or so, to promote reaction and secure circulation. By repeated applications of this sort, the circulation of the skin, which in neurasthenia is generally poor, may be wonderfully improved. As the skin fills with blood, the congested internal organs are relieved of their surplus blood; congestion of the brain, of the liver, stomach, and other viscera, disappears, and gradually the normal balance in the blood distribution is restored.

"Tonics" Useless "Nerve Foolers"

The neurasthenic is constantly told that his nutrition is defective, that he needs building up. He seeks to accomplish this by means of tonics of various kinds, in most of which strychnia is the dominant element. This "building up" is purely fictitious, for it is only through the use of natural physiologic agencies that tissue building can be accelerated or improved. Tonics make the patient feel better without making him better. They have been aptly termed "nerve foolers." They produce a false sense of vigor and

energy, which results in the further draining of the patient's already depleted stores of energy and vitality.

What the neurasthenic needs is tissue reconstruction. He needs better nerve cells, stronger nerves, neurons with a better store of energy granules.

The Simple Life Essential

In another chapter a series of rules has been given for the practice of simple life principles. There can be no doubt that the best way to aid Nature in the work of rebuilding a depreciated body is to be found in a thorough adoption and careful following of these "return-to-Nature" principles. It is not necessary to repeat here what has been said upon this subject. It is quite sufficient to say that every neurasthenic must lead the simple life, not temporarily, but continuously and permanently.

A neurasthenic has a broken-down constitution. He is not necessarily a physical wreck, but his body is crippled in a way that limits his energies and restricts his activities.

Unfortunately, the injury which he has received is more or less a permanent one, and hence the remedy must be permanent also.

When a constitution is once broken down under disease-producing conditions, the most that can be hoped for as a result of treatment is such a restoration of the injured organism as will enable it to perform its work in a reasonably satisfactory manner, under conditions adapted to the individual case. These favorable conditions, when once established, must be permanently maintained.

Out-of-Door Living

The out-of-door life is as necessary and valuable in the restoration of neurasthenics as in the cure of pulmonary tuberculosis. This simple natural measure owes its effectiveness to the fact that it restores the patient to one of the conditions of primitive human life. Man is naturally an out-of-door dweller. Many of his maladies, including neurasthenia, are the result of indoor dwelling, through which the vitalizing effects of light and an open-air life are lost. Exercise

in the open air is indispensable to permanent restoration. Exercise must be taken judiciously and systematically. There is nothing better than out-of-door work. The work cure is especially valuable, because it occupies the mind as well as the muscles.

Fresh-air sleeping is of highest importance. There are many ways of securing out-of-door air during sleep. See accompanying cuts.

Cold Bathing

The cold bath often accomplishes wonders for the neurasthenic. Every one is familiar with the agreeable effects of the application of cold water to the face and hands when one is weary or exhausted. The fusillade of impressions which fall upon the brain as the result of a general cold bath is through the excitation of the millions of "cold spots" of the skin, and is a most powerful means of exciting languid nerve cells into renewed activity. The reaction after the properly administered cold bath is an exceedingly agreeable experience and is not followed by the unpleasant depression which

follows the use of drug tonics or stimulants. Cold is much more than a temporary stimulant. Continuous or repeated applications of cold have a powerful influence upon metabolism. This is well shown in the improved appetite which follows wise applications of cold water. Improved appetite is only an indication of improved assimilation, and means accelerated tissue building, which is the only way by which the neurasthenic can hope to be permanently lifted out of his wretched state, and placed upon a durable foundation of good health.

A cold morning bath properly administered is a complete antidote for the morning depression experienced by many neurasthenics. It is of the highest importance, however, that the bath should be taken in a proper way. The average neurasthenic would be little likely to receive benefit from a plunge into a tub filled with cold water. Such a bath would likely be followed by an aggravation of symptoms, increased pain, increased depression, increased disturbances of circulation, as shown by cold hands and feet,

etc. A single trial would be sufficient to discourage further efforts in the direction of cold bathing. Neurasthenics are generally highly sensitive to the effects of cold water, and on this account it is necessary that several important precautions should receive careful attention.

Here are a few rules which should be borne in mind:

1. A cold bath should never be taken when one is tired or exhausted.

2. Applications toward which there is an instinctive dread should in general be avoided. The bodily instincts generally crave things that are good for the body, and repel things likely to do harm.

3. General cold applications should never be made when the skin is cold, when a sensation of chilliness is present, when the hands and feet are cold, or when the head is hot. In such cases, the skin must be warmed by a warm bath, such as the electric light bath, or the hands and feet should be heated by placing them in water, and the head cooled by the application of a towel wrung out of

cold water (not ice-water). The cold bath must also be avoided when the body is much fatigued or overheated. In such a case a very short hot bath should be taken and followed by a neutral rub (92°-96° F.).

The Cold-Air Bath

Generally the best time for a cold bath is immediately on rising in the morning. In many cases it is well to begin with a cold-air bath. The patient gets out of bed, removes his sleeping garments, and walks about the room while rubbing the skin vigorously with the hands, swinging the arms about, hopping up and down, or exercising with light dumbbells or Indian clubs.

Feeble patients may lie upon the bed with the clothing removed, and exercise by raising the legs, swinging the arms about, rolling over, deep breathing, etc. As soon as the slightest chilly sensation is felt, the patient should return to bed, cover well, and rest until good reaction occurs; that is, until he feels warm and comfortable.

In winter time a cold-air bath may be made a most effective tonic measure. When

the temperature of the air is very low, the time of exposure may be made quite short, and the body may be exposed three or four times for one or two minutes at a time. An important point is to secure a good reaction after every cold application. In warm weather, cooling effects may be obtained by means of an electric fan.

The Cold Towel Rub

An effective cold water bath may be taken in a variety of ways. A simple plan is the towel rub. This requires the services of an attendant in case the patient is feeble, but may be self-administered by a person of average strength. This bath consists simply of wringing a towel out of cold water and then rubbing the whole surface of the body with the wet towel until the skin is reddened and a good reaction produced, then drying well. A feeble patient should rest in bed for a half hour after, well covered to promote reaction. A stronger person should take a walk, or other exercise, for half an hour.

The Cold Tub or Shallow Bath

A more vigorous bath may be taken by standing or sitting in a bath tub containing two or three inches of cold water and applying the water to the whole surface of the body, with vigorous rubbing with the hands or with a sponge or towel. Such a bath should be of very short duration, not more than half a minute, or a minute at the longest. With beginners, the duration should be not more than ten or fifteen seconds.

The Rowing or Surf Bath

The cold bath is by far most effective when combined with exercise. Swimming and surf baths are justly noted as the best of all forms of cold bathing for general tonic effects. An accompanying cut shows a device which the writer has had made for his own use, by means of which a rowing or surf bath may be taken in an ordinary bath tub. The device consists of a short bar, with handles at each end, to which is attached a heavy rubber cord and a scoop-shaped dipper. In use, the rubber cord is looped over

the faucet fixture at the foot of the tub. Rowing movements are then executed and with each movement a dipperful of water is scooped up and dashed against the chest. As the body is inclined backward the water flows up around the neck, over the shoulders, and down the back. With energetic movements the effects of a real surf bath are well reproduced.

The amount of exercise may be made as great as desired by prolonging the bath. The bath may begin at pipe temperature; or, starting as a warm bath, the cold water faucet is opened and thus the temperature falls gradually while the body is warmed by the muscular work.

After the Bath

After a cold bath the surface of the body should be well rubbed with a Turkish sheet or towel until well dried. Persons with sensitive skins should apply white vaseline or some good unguent after the bath, so as to prevent the irritation which often results from frequent bathing, especially in cold

The Bath Exerciser, or Surf Bath

weather, or when the air is dry, or when very hard water is used.

A most excellent unguent for this purpose is a formula which was kindly given us by Dr. L. D. Bulkley, the eminent skin specialist of New York City:

Lanolin	2 drams
Boroglyceride	1 dram
Cold Cream (made with white Vaseline)	6 drams

When there is itching or burning of the skin, ten grains of menthol may be added to the above.

By taking care to coat the skin with this simple preparation after every bath, the irritation which arises from the drying and chapping of the skin (which exposes the delicate nerve filaments) may be prevented.

Nervous Dyspepsia, Gastric, Splanchnic or Visceral Neurasthenia; the "Blues"

THE Chinese believe the seat of the soul to be the stomach. The ancients regarded the bowels as the seat of the emotions. The old Greeks called a man who was depressed a hypochondriac (below the ribs), while we say he is "down in the mouth," because of the fact that the angles of his mouth are drawn down instead of up, as in smiling or laughing. There is really good basis for the ancient notions referred to. The viscera of the abdomen are much more closely associated with character and mental states than we appreciate.

We do not think with the stomach nor feel with the intestines, but the state of the stomach and bowels influences our thoughts and our emotions to a striking degree. The region of the stomach is the seat of the solar plexus, that great abdominal brain

which exercises a controlling influence over all the functions of digestion, blood-circulation, elimination—all the automatic processes of animal life. The great sympathetic chain of ganglia is the center of the organic life of the body.

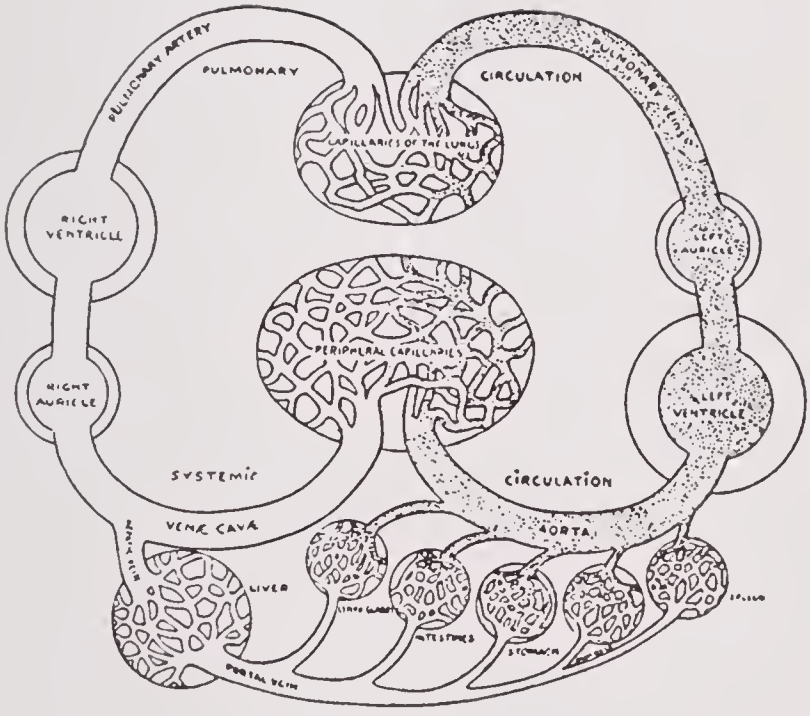
Through the close association of the abdominal brain and the cerebrum, there is an intimate connection between digestion and mental action. It is through this association of the cranial brain and the abdominal brain that mental states affect digestion so profoundly, and the reverse. Nausea and even vomiting may be produced by purely mental impressions. In like manner, disturbed digestion may react upon the mental state unfavorably.

This association of the solar plexus and the brain explains in part the mental miseries of the nervous dyspeptic, but not wholly. The after-dinner drowsiness, nervousness, and depression, are to a large extent dependent upon the relation of the abdominal blood-supply to that of the brain. The large vessels which supply the stomach,

intestines, and other abdominal viscera, are together known as the splanchnic vessels. These blood-vessels, including the portal vein and its branches, form the most capacious vascular area in the body. These great vessels have twice the capacity of those of the muscles, and fifty per cent more than the vessels of the skin, and are capable, when distended, of holding all the blood of the body. After a meal, they become distended with blood as the result of the physiologic congestion attending digestion. Through lack of proper nervous regulation, the vessels of the various organs of digestion are in the neurasthenic patient widely dilated, so that these organs are overfilled with blood. The effect is to rob the brain of blood during the early part of the digestive process.

This fact explains the mental confusion, inefficiency, drowsiness, and sometimes faintness, that follow a meal in cases of gastric neurasthenia.

Many gastric neurasthenics suffer from hyperacidity due to excessive secretion of



The Portal Circulation

gastric acid. With this condition is usually associated an excessive secretion of fluid, as the result of which an abnormal amount of fluid is withdrawn from the blood, which still further decreases the supply of blood to the brain. How serious a matter this may be will be realized when it is recalled that the total amount of liquid abstracted from the blood in the formation of the digestive fluids during a single day may amount to five quarts or more.

Worry Excites the Abdominal Brain

Overactivity or too prolonged activity of the brain, especially worry and harrassment of the mind, unquestionably excite the abdominal brain to a harmful degree and lead to gastric and other visceral disturbance. Many gastric neurasthenics are able to digest an ordinary meal without difficulty when the mind is at ease, but lose both appetite and digestive power as soon as an unpleasant emotion takes possession of the mind. The writer recalls the case of a man who was unable to eat for several days

after encountering an offensive and malodorous object in his garden. He at once began vomiting. For a number of days whenever he sat down to the table to eat, a mental picture of the offensive object rose in his mind, he became nauseated, and was obliged to leave the table immediately, and would vomit until exhausted.

Pawlow has shown the intimate relation between the brain and the stomach in the production of appetite juice, and the dependence of good stomach function upon agreeable sensations associated with food and eating. The gastric neurasthenic is to an abnormal degree susceptible to these influences, and hence needs to be informed of the importance of giving heed to these relations in his eating habits.

The Splanchnic Pool

But there are still other factors, largely mechanical, which play a most important part in the phenomena of this diseased condition. The splanchnic circulation is subjected to mechanical as well as to nervous

control. The large vessels which compose the splanchnic circulation are supported and compressed by the muscular walls of the abdomen. It is this support and pressure which prevents the vessels from becoming overdistended with blood when the body is in the upright position, thus depriving the rest of the body of the needed blood-supply. Without this support, the erect position, especially if suddenly assumed, would give rise to pallor and faintness because of the withdrawal of blood from the brain. This often occurs in gastric neurasthenics of a pronounced type. This is one explanation of the vertigo to which this class of neurasthenics is much subject. These symptoms are most likely to occur soon after eating, because of the accumulation of blood in the vessels of the stomach and intestine, resulting from the excitation of the digestive glands. Temporary relief may be obtained by lying down.

Weakened Abdominal Muscles

An examination of these very interesting cases shows a marked weakness of the ab-

dominal muscles. Generally there is marked prolapse of the abdominal organs, and a characteristic figure and standing attitude.

Weakness of the trunk muscles, resulting in a sagging of the abdominal wall and a prolapse of the viscera, must be regarded as one of the causes of gastric or splanchnic neurasthenia, one of the most common results of a sedentary life. The deforming bulge of the lower abdomen is most commonly seen in persons of sedentary habits. It is most common in women, but professional men of all classes very frequently present the same ungainly shape of body and suffer from the natural consequence—splanchnic engorgement and visceral neurasthenia.

Important Functions of the Diaphragm

A factor which adds to the injury resulting from defective development of the trunk muscles is the interference with the normal functions of the diaphragm in breathing. This great muscle, which forms the partition between the thorax or chest and the abdomi-

nal cavity, is not simply an organ of respiration. The diaphragm in its downward movements not only draws air into the lungs by an action resembling that of the piston of a pump, but while producing a suction effect in the chest, the descending diaphragm at the same time compresses the liver, stomach and other viscera against the tense abdominal wall, and thus empties them of blood and so assists the portal circulation, propelling the venous blood of the abdomen toward the heart.

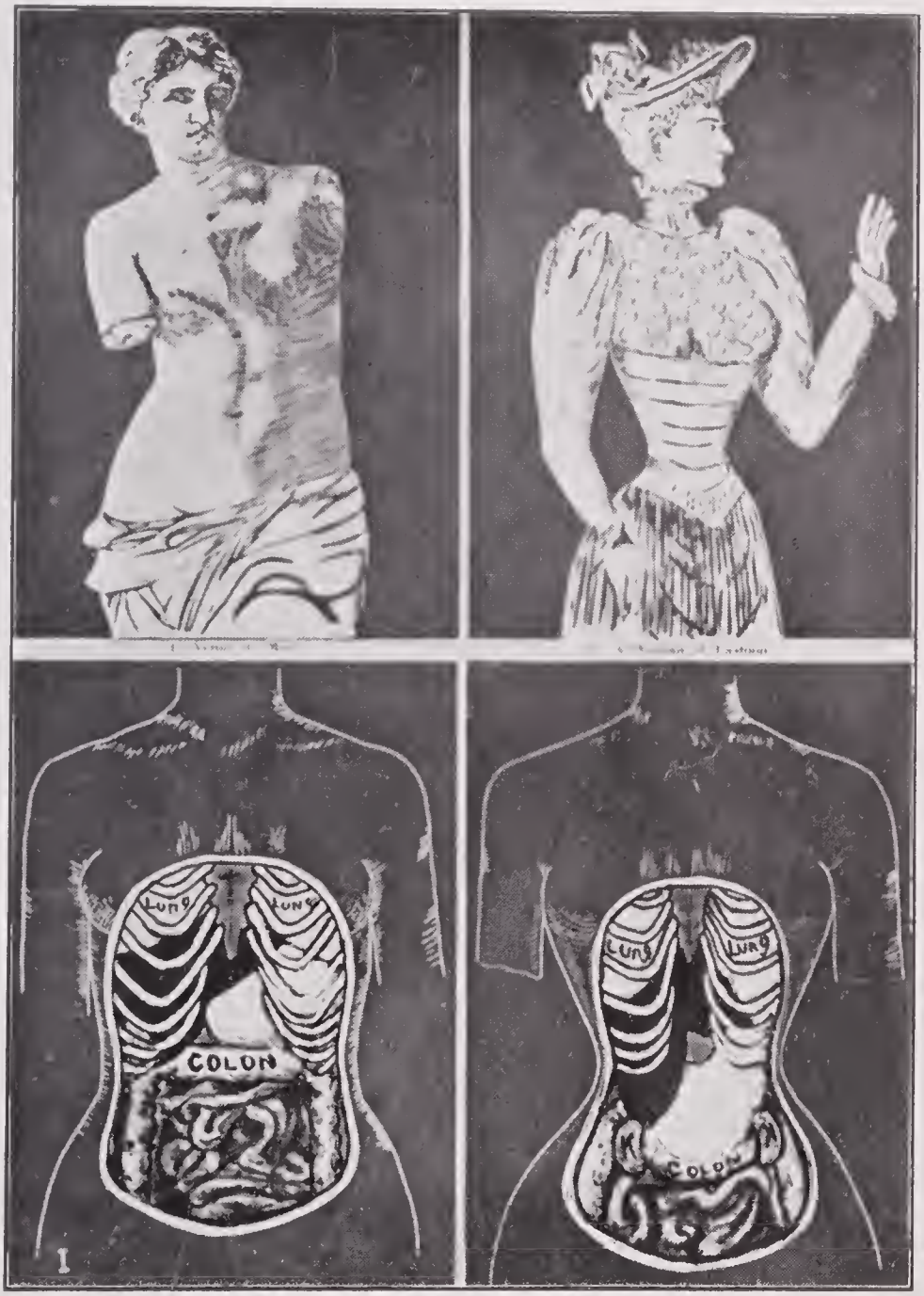
Congested and Crippled Viscera

When the abdominal muscles are weak and relaxed through lack of tone, or when they are relaxed by a stooped position in sitting or standing, the movements of the diaphragm are necessarily rendered ineffective and have little influence upon the abdominal circulation. The result is that the blood stagnates in the liver, spleen, stomach, and other viscera. Blood stagnation always means an accumulation of toxins. The oxygen of the blood is consumed and a con-

dition closely bordering on asphyxia results. The half-asphyxiated viscera cannot properly perform their functions, digestion fails, and the liver lags in its work of destroying poisons and purifying the blood. The colon, the movements of which are greatly aided by the movements of the diaphragm, becomes inactive, stasis or stagnation occurs, and colitis is the natural result, with chronic intestinal toxemia and a growing accumulation of physical discomforts and disabilities.

Bad Effects of Corset Wearing

Corset wearing in women, compression of the waist with belts sometimes practiced by men, and other conditions are potent in breaking down the blood-circulating function of the diaphragm and thus increasing the congestion of the great sympathetic centers, producing irritation with reflex disturbances of the central nervous system, which shows itself in a great variety of mental and nervous symptoms; such as coldness of the hands and feet, tingling and numb sensations, blushing of the face and head, mental



Normal Waist Viscera Constricted Viscera, Prolapsed

dullness, irritability, insomnia, fidgets and other neurasthenic miseries, to say nothing of the more serious structural and organic changes which later appear in the liver, stomach, spleen, kidneys and blood-vessels.

Many women wear their clothing so tight at the waist that the diaphragm is forced high up in the chest and is there held, so that natural breathing is impossible (see accompanying cut). This is unquestionably a most prolific cause of the "nervousness" so nearly universal among well-to-do American women.

Disordered Abdominal Brain

In certain cases, the congestion of the solar plexus and other sympathetic ganglia is so pronounced that it becomes the source of much distress and uneasiness. Extreme tenderness at the pit of the stomach and about the umbilicus, frequently accompanied by palpitation of the aorta in the same region, creates a suspicion of the existence of aneurism of the abdominal aorta, an error in diagnosis into which even physicians are not infrequently led. In these cases the

abdominal muscles, instead of being relaxed, are not infrequently in a state of spasm, the result of reflex stimulation from the irritated sympathetic centers. These patients generally note that the palpitation increases after eating and when obliged to stand long on their feet. After a meal the pulsation of the aorta is so violent as to produce actual physical disturbance. Exercise upon the feet, especially after eating, is accompanied by backache, increasing coldness and clamminess of the hands and feet so long as the exercise is continued, relief being obtained only by a recumbent posture.

Overeating, hasty eating with neglect to masticate food properly, overloading the stomach by drinking an excess of liquids at meals, and chronic constipation with the resulting colitis—these are frequently among the active factors in the development of nervous depression.

Treatment of Splanchnic Neurasthenia

The rational treatment of visceral neurasthenia demands first of all, development

of the muscles of the trunk and training in correct posture. These two things are, in fact, the most essential features of the successful management of these cases. A case which illustrates the truth of this statement first came under the writer's professional care some thirty years ago. The patient was a great sufferer from typical visceral neurasthenia. Insomnia, despondency, and physical inefficiency, had reduced him to a most wretched condition. In spite of the most thorough application of hydrotherapy, together with other physiologic measures, including careful regulation of diet, this patient made very little improvement and after three months returned to his home without material change for the better. Three years later, the same patient reappeared and reported that despite various changes of climate and following the advice of a great many prominent physicians, his condition was practically the same as when he was first seen.

A Bad Neurasthenic Cured by Correction of Posture

In the meantime the writer had made a careful study of the effect of posture and muscular development in these cases, and recognized at once the characteristic outline, as the patient stood with flat chest, rounded shoulders, and bulging lower abdomen. The patient was at once given a lesson in correct sitting and standing and was taught a variety of exercises for the development of the abdominal muscles. An abdominal supporter was applied to hold the viscera in place while the muscles were being developed, with the result that in six weeks the patient declared himself substantially well and returned to his home. A year or two later when we were on a visit to Boston the patient called at our hotel and reported himself to be in perfect health. He attributed his recovery entirely to change of posture and abdominal support. He declared he felt immediately relieved as soon as the chest was lifted and the abdominal muscles drawn in and held in place. This has been the

experience of many hundreds of patients who have received the same prescription within the last thirty years.

Always Carry the Chest High

The accompanying cuts show correct and incorrect standing and sitting positions and also indicate a simple method for acquiring a correct position in sitting and standing. It must be constantly held in mind that the chest is always to be carried high. By this means the abdominal muscles are rendered tense, and thus form a firm resisting wall against which the abdominal viscera may be pressed by the descending diaphragm.

A Simple Method of Acquiring a Correct Standing Position

In a correct standing position, a plumb line dropped from the ear should fall just back of the first joint of the great toe. Many persons stand with the hips placed so far forward that if a plumb line were dropped from the ear it would fall opposite the heel. In this position, the chest is flattened, the abdominal muscles are relaxed, and the lower

abdomen protrudes. In a correct position, the chest is carried well forward, the hips are held well back. The back is quite strongly concave, and the anterior wall of the trunk is convex. The abdominal muscles are well drawn in. This position may be secured without the aid of an instructor by the following method:

Standing with the back against a wall or a door, brace the heels, hips, shoulders, back of head and the little finger side of each hand firmly against the wall. Now push the shoulders forward away from the wall, by bending the head backward until the eyes look straight up to the ceiling, keeping the heels, hips and hands firmly pressed against the wall so as to fix the muscles of the trunk; then bring the head forward away from the wall, drawing down the chin without allowing the shoulders to move backward.

The poise of the body will now be found very nearly correct, but slightly exaggerated. Relax the muscles slightly while still holding the chest up; step out from the wall, swinging the arms, and the result will be a

Getting Correct Standing Posture. (Second Position.)

Correct Standing Posture

perfect standing and walking poise. Persons past middle life whose occupations have been sedentary, especially those who have been occupied with desk work, are generally flat chested and round shouldered to a very marked degree. Not infrequently in such cases, so extensive changes of the muscles and bones have occurred, that the form of the body has become fixed and cannot be entirely corrected. This is especially true in cases in which ossification of the cartilages of the ribs has taken place. Even in such cases, however, very great improvement may be secured, and the benefit to be derived from an approximate approach to correct attitude is so great that the effort is well worth while.

How to Acquire a Correct Sitting Attitude

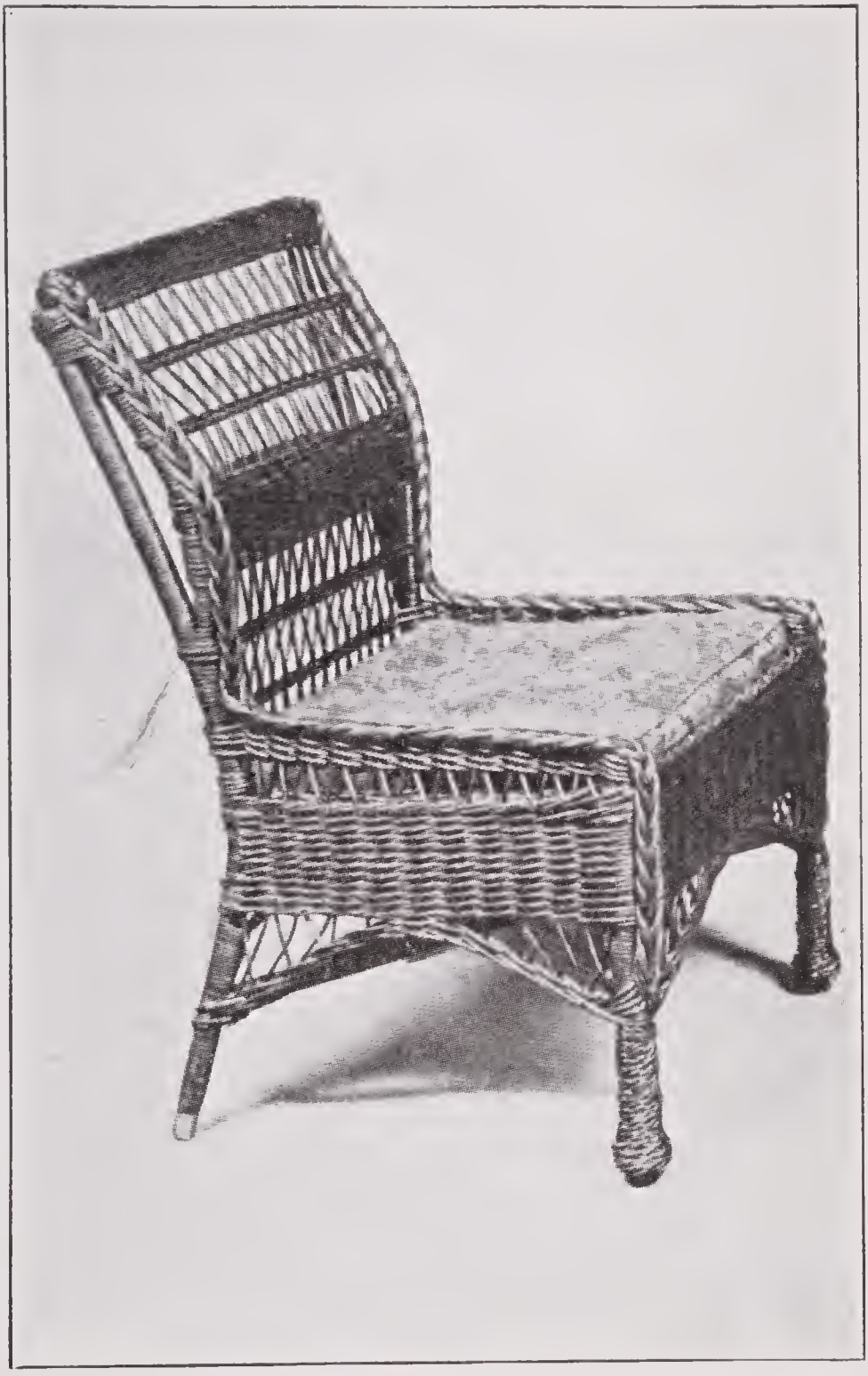
After having acquired a correct standing attitude, it is easy to acquire a correct position in sitting. One soon learns to recognize the "feeling" of the correct position. Once acquired, it is very easy by a simple voluntary effort to at once assume a

correct poise, no matter what the general posture of the body may be. The important points are that the chest should be held high and the abdominal muscles well drawn in.

When a correct poise is maintained in sitting in a chair with a straight back, the trunk of the body will touch the back of the seat only at the top and bottom; the central portion of the trunk will be held free from the chair back; but to maintain such an attitude becomes exceedingly tiresome, for it necessitates the persistent contraction of the muscles of the back. Hence the back of chairs, settees or other seats should have a forward curve so that the central portion of the trunk may be supported. This will obviate the necessity for continued muscular effort in sitting, and will in consequence greatly add to the comfort, and render the seat more comfortable and restful.

Disease-Promoting Chairs

Many chairs are made with hollow backs which are in the highest degree objectionable. Most chairs are constructed with reference to artistic effects rather than to meet



The Physiologic Chair

physiologic needs. The defect of the ordinary chair may be partially remedied by means of a cushion placed in a position to support the hollow of the back, as shown in the accompanying cut.

A very simple exercise will enable any one easily to put himself in a correct sitting position. The various steps in the procedure are as follows: Sitting in a chair, place the hands upon the hips with the thumbs behind. Bend the body forward and head backward, keeping the eyes on the ceiling. Now make very hard pressure with the thumbs and maintain this pressure while bringing the trunk up to the ordinary sitting position, drawing down the chin as the trunk is raised. The purpose of making pressure with the thumbs is to keep the trunk rigid, so that the chest will be held up and only the upper and lower parts of the trunk will touch the back of the chair, while the central part of the back, the so-called "small of the back," is held forward free from the chair. The chest will be found to be held well up and the abdominal muscles drawn in. If now a small

cushion is placed behind the back, it will be found that the chest still remains elevated after the muscles are relaxed, because the back is prevented from receding.

Correct posture in standing and walking is of the highest importance as a means of preserving health, and must be kept constantly in mind by persons suffering from prolapse of the abdominal organs and splanchnic neurasthenia.

The Abdominal Supporter

A properly constructed and well adjusted abdominal supporter is of the greatest service in these cases. The purpose of the abdominal supporter is not simply to hold in position the abdominal viscera. The real advantages gained from the abdominal supporter are chiefly two, as follows:

The first, is increase of the intra-abdominal tension, whereby the large vessels of the abdomen are supported, thus preventing an undue accumulation of blood, which necessarily occurs when the walls of the abdomen are relaxed. This advantage is chiefly gained during inspiration, when by descent

of the diaphragm the viscera are strongly compressed and emptied of their blood. By the compression below the diaphragm combined with suction above the diaphragm, the blood is efficiently aided in its progress toward the heart, thus relieving the visceral congestion, which, by giving rise to visceral irritation, is a source of a multitude of back-aches, side-aches, leg-aches, and other miseries from which neurasthenic patients suffer.

Advantages of Abdominal Support

The second advantage of the abdominal supporter, and one of no small importance, is the assistance it renders the patient in his efforts to maintain a correct posture. The pressure of the supporter is a constant suggestion to the wearer to sit erect. Whenever the chest is allowed to drop, the bending of the trunk renders the supporter uncomfortable and thus prompts the wearer to assume a correct posture.

Every visceral neurasthenic will be benefited by the wearing of a good supporter, at least during the first months of treatment,

until the abdominal muscles become sufficiently strengthened and the patient sufficiently trained to make the maintenance of the correct posture possible without the aid of the supporter. With persons who are considerably past middle life and in whom the abdominal muscles have become so weakened that development to the point of efficient service is no longer possible, and especially in those cases in which the spine has become straight and rigid, the normal anterior lumbar curve having been destroyed by habitual standing and sitting in a relaxed or stooped posture, the abdominal supporter must be worn permanently. Spinal rigidity is also sometimes the result of chronic arthritis of the vertebræ. These cases also require the use of the abdominal supporter, which often affords very great comfort through relief of strain upon the nerves of the mesentery, which are rendered painfully sensitive by the chronic congestion of the sympathetic ganglia and the drag of heavy viscera.

Curative Exercises

Among the most important of all the curative measures which can be brought to bear in these cases, are special exercises for the development of the muscles of the trunk, and especially the abdominal muscles. All exercises of the trunk which are taken with the chest held well forward, and the abdominal muscles held in, are beneficial. But most valuable of all are exercises taken with the body in a reclining position. For the best effect the body should be supported at an angle of about forty-five degrees, with the head low. In this position, gravitation renders valuable assistance in restoring the prolapsed viscera to their position in the upper part of the abdominal cavity; and the size and the weight of the viscera are greatly lessened by the drainage of the abdominal cavity into the upper part of the body, which empties the viscera of their blood. An ordinary ironing board may be easily converted into an exercise table by resting one end upon the floor and the other upon the window sill or the side of a bed.

The writer has devised an exercise table which has been found very convenient for exercises for developing muscles of the trunk, and for correcting spinal curvatures, which are often a result of deficient development of the trunk muscles. This table and some of the various exercises which may be taken with it are illustrated in accompanying cuts.

Special Exercises with the Inclined Table for Neurasthenics

The foot of the table should be raised about eighteen inches. The position of the patient should be the one shown in the accompanying cut, the head resting on the floor, the body supported by the inclined surface of the table.

Replacement and De-congesting Exercises

The purpose of these exercises is to restore the stomach and colon to the upper part of the abdomen where they belong, and to drain the congested organs of their surplus blood. The body is prevented from slipping down by passing the feet through the loops. By grasping the hand rests at

the sides of the table the body may easily be lifted back into position if it slides down. The chest should be held high during all the exercises. To aid in keeping the chest up it is well to place a pillow or a pad at the "small of the back." By this means the chest may be fixed in an elevated position. The large muscles of the abdomen are made tense and thus the act of breathing becomes more efficient. While holding the body in this position take the following exercises:

Exercise 1

1. Breathe deeply while percussing and beating the abdomen vigorously.

Exercise 2

2. *Deep breathing,* hands grasping the sides of the table, pull with the hands while breathing out. This fixes the chest in a high position and so secures full action of the abdominal muscles.

Exercise 3

3. *Deep breathing,* hands clasped over lower abdomen, pressing firmly during both

inspiration and expiration. This strengthens the breathing muscles.

Exercise 4

4. While breathing deep, finger tips touching, make pressure upon the abdomen with the little finger side of the hands, starting just above the pubes and working slowly upward an inch or two at each breath. The pressure should be continuous during expiration and inspiration. Repeat six or eight times. This lifts the prolapsed stomach and bowels into position.

Effect of Breathing Exercises

The effect of the above exercises, if they are properly taken, is to aid gravity in lifting the prolapsed stomach and bowels and other organs into position. It is very important that they should be taken before taking other exercises, so that the prolapsed organs may be restored to their normal place, as exercises taken with the organs in a wrong position are likely to do quite as much harm as good.

Exercises for Strengthening the Muscles of the Neck and Trunk

The following series is carefully graduated so as to avoid harm to feeble persons who are not accustomed to much use of the muscles:

Head Raising Exercises

1. Head Raising.
   a. With hands grasping the strap, pull and raise head forward as far as possible.
   b. Grasp the handles and raise the head.

These exercises should be repeated eight to sixteen times.

It is a good plan to regulate the exercises by counting, or with instrumental music.

2. Trunk raising.

The body is raised to the sitting position, assistance being given by pulling upon the strap. The trunk raising may be assisted also by grasping the handles at the sides of the table. After a time the muscles of the trunk become stronger so that this move-

ment may be easily executed without the assistance of the strap. For full exercise of the abdominal muscles the hands are placed on the hips.

Among the exercises which are especially useful in developing muscles of the trunk are the following, to be taken on the inclined exercise table:

1. Flex and extend the feet.
2. Rotate the legs, outward and inward.
3. Flex and extend the legs.
4. Stretching.

With the knees flexed:

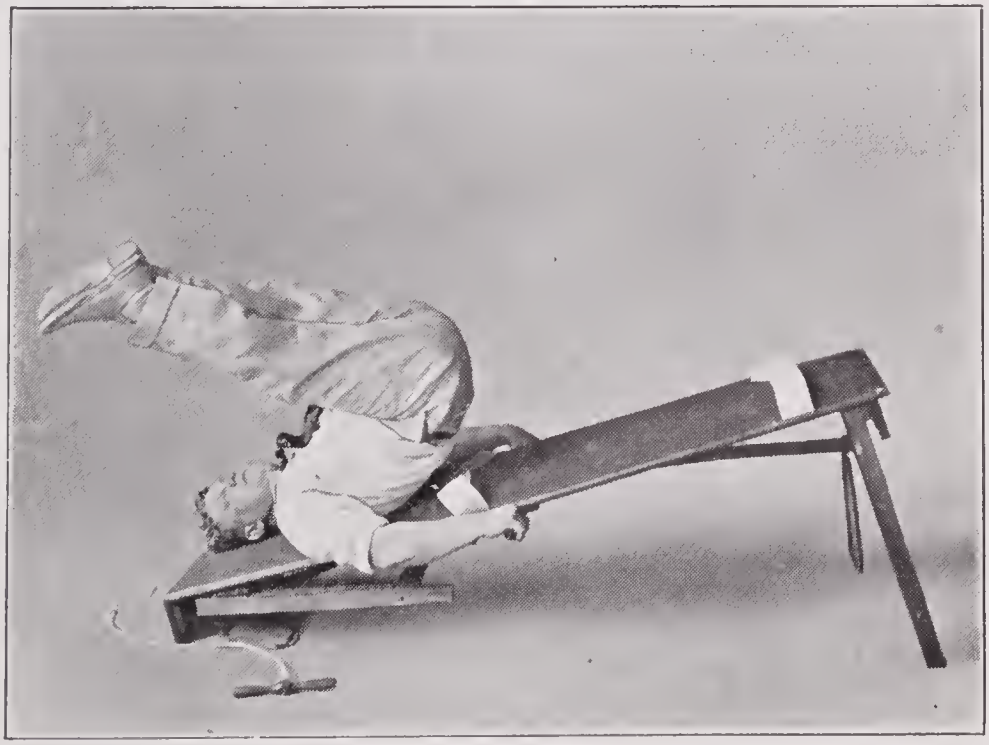
1. Knees separating.
2. Hips raising.
3. Knees separating, hips raising.
4. Hips rolling, knees extending and flexing.

Skilled Direction Valuable

While the accompanying cuts give a very good idea of how the exercises should be taken, it is best that the exercises should be directed at first by a trained person.

INCLINED TABLE EXERCISES

Leg Raising



A Vigorous Trunk Exercise

Drug Neurasthenia

WITHIN the last half century, and particularly within the last twenty-five or thirty years, there has been developing in the United States a growing army of neurasthenics whose brains and nerves have been damaged by the habitual use of toxic agents of various sorts. Every opium or cocaine habitué and every chronic inebriate is a neurasthenic and may have been such before he began the use of the enthralling drug. The ranks of drug habitués are constantly recruited from the great and growing horde of neurasthenics in every civilized land. Many a poor fellow finds his neurasthenic tortures so acute that he can no longer endure them, and knowing no other way of escape, he flees to the oblivion afforded by a narcotic drug, only to find his sufferings increased when the effect of the drug has passed; and so from day to day he sinks deeper in the mire of disease until he finally lands in the lunatic asylum, unless he is fort-

unately sooner carried off by some acute or chronic affection of the kidneys, heart, or lungs.

These poor unfortunates are scarcely to be blamed for their attempt to find relief in narcotism. They are simply driven before a blast of mental and nervous anguish which their weak wills cannot withstand. They have no chance for their lives. Made neurasthenic by bad heredity and ignorance of the principles of "right living," they drift helplessly to their fate. It is high time that the State should offer a helping hand to these unhappy sufferers. Institutions should be provided where at State expense they may be shielded from temptation, taught self-control, and trained in normal habits. Little can be done for patients of this class except in institutions where they may be under complete control, and may have the benefit of expert medical attention and treatment by specially trained nurses.

But there is another still larger class of drug neurasthenics who may be helped by the adoption of correct habits and the

avoidance of the causes of their malady. These are the habitual users of "tonics," "hypnotics," and various other medicinal drugs and nostrums of divers sorts. In this class must also be included many of the users of tea, coffee, tobacco, and alcohol in so-called "moderation."

Strychnia has for generations been the popular tonic. Countless thousands have been deceived by its delusive effects. Physicians are chiefly responsible for the false confidence reposed in this powerful nerve excitant. Modern studies of nutrition have clearly demonstrated the futility of attempting to find any substitute for the vital energy generated by healthy cells acting under the influence of normal or physiologic stimuli. The apparent increase in vigor which follows a dose of strychnia is not due to an actual addition to the sum of bodily energies, but is simply the result of a forced expenditure of energy which is already depleted to the point of danger. Strychnia and other similar drugs are simply devices for getting out of a man energy which he

cannot afford to spare and which he ought to keep. The jaded journalist needs a rest instead of a tonic. The tonic may for the time being conceal from him the fact that he needs a rest, but the rest is needed none the less, and in due time will be imperatively demanded with interest.

The mischief done by these factitious remedies, and the way in which they lead straight to neurasthenia are well illustrated by the following case, hundreds of examples similar to which might be cited from the writer's experience.

Some years ago the writer received a letter from a physician in a distant State, describing the case of a patient whom he desired to bring to the institution for treatment. The lady, the doctor said, had acquired the morphine habit and was constantly requiring larger doses, so that it was evidently necessary that something should be done. In due time the doctor arrived with his patient and told the following story:

"Some two years ago," said the doctor, "the patient came to me for a tonic to help

her through a church fair, of which she was the director. She was simply tired out, but felt that she must get through with the affair and wanted some sort of a tonic to brace her up. I gave her some two-grain quinine pills to be taken, one three times a day. She felt better for a few days, then came back for something stronger, so I gave her some strychnia pills in addition to the quinine. This worked very well for a short time; then she came complaining that she could not sleep at night, so I gave her bromid. This worked well for a few days, then I had to add chloral. Then she complained that she felt bad in the morning, that the pills did not seem to help her sufficiently, and I had to increase the dose of strychnia. This increased the sleeplessness, so I had to give her morphia to enable her to sleep. Her bowels became bad, so I had to begin giving her laxatives. The effect of small doses of morphia soon wore out, and I had to give her larger doses. Then I had to increase the laxatives, until finally I was obliged to give her croton oil to secure any bowel move-

ment. After a while this seemed to lose its effect, and now I am giving her two tablespoonfuls of unground mustard seed before breakfast, which is the only thing that will move her bowels. I have also recently added arsenic as a tonic, so that now she is taking two grains of quinine, one-thirtieth of a grain of strychnia, one-twentieth of a grain of arsenic, each three times a day; and at night twenty grains of chloral and thirty grains of bromid of potassium. She has to have several grains of morphia every night and morning. Today (day of arrival) I have given her eleven grains of morphia."

The patient's condition was wretched to the last degree. She had no appetite, was emaciated, skin the color of leather, highly neurasthenic, extremely irritable and depressed. The patient was quickly weaned from her drugs by the means of a simple nutritious diet, together with baths, massage, and physiologic measures of various sorts, so that in the course of three or four months she was quite restored to health, and in fact

declared herself to be perfectly well for the first time in years.

Many thousands of patients have been in a similar way drugged into neurasthenia by irrational treatment. The lack of success of routine methods of dealing with this class of patients, and the disastrous results often seen from drug habits acquired through the prescription of physicians and druggists, may be largely responsible for the development in modern times of Christian Science, the mind cure and various other occult methods. However irrational they may be, they are certainly no more irrational than some of the methods which they supplant and, to say the least, they produce less deplorable results.

The use of hypnotics to induce sleep has been a most prolific cause of drug neurasthenia. Bromids, once exceedingly popular, have now fallen into disuse, largely because of the nervous depression following their employment. The writer recalls numerous cases which illustrate the nerve-paralyzing effects of the bromids. One case was that of

a lady brought from a neighboring State by her husband and her physician, who carried her in their arms from the carriage to the train. The lady was unable to walk because of a persistent vertigo, and a weakness in the legs which made it impossible for her to stand upright. At the end of three or four days the patient was walking all about the grounds, to her great surprise and delight. Her recovery was so rapid as to seem almost miraculous. The reason for the sudden disappearance of her distressing symptoms was disclosed when she mentioned the fact that her physician had left her a bottle containing a solution of bromid, with instruction that she take a teaspoonful whenever she felt nervous. She said she had felt nervous all the time and so had taken a teaspoonful every half hour or so until she came to the institution. The vertigo and the weakness of the legs were simply the toxic effects of the bromid which she had been taking.

Other drugs, not much less harmful than chloral and potassium bromid, are now

fashionable remedies for sleeplessness and nervousness, but certainly these drugs, like their predecessors, are by no means innocent. Their habitual use sooner or later results in a neurasthenic state which can only be cured by complete abandonment of the drug, and building up of healthy nerves through good nutrition and other physiologic means.

Tea and Coffee Neurasthenics

The widespread use of tea and coffee in England and America and in other civilized countries, is unquestionably a prolific cause of neurasthenia, especially in women who, on the whole, seem to be more susceptible to these drugs than are men, and more addicted to their use.

A man or woman who cannot begin a day's work in comfort without one or two cups of tea or coffee, or who suffers from headache or nervousness when deprived of the accustomed beverage, is a tea or coffee neurasthenic and as much a drug habitué as a person who is addicted to the use of opium or cocaine.

Tea and coffee topers are increasing in numbers, notwithstanding the wide diffusion of information concerning the pernicious character of these drugs. Persons who are predisposed to neurasthenia very naturally resort to tea and coffee to steady their nerves, to drive away depression, or to relieve mental confusion.

The tea pot, in many homes, is kept hot as a ready resort for relief from headache, certain forms of which, while produced and aggravated by the use of tea and coffee, are temporarily relieved by a cup of strong tea or coffee. That these drugs produce decided injury to the nerves is not surprising when the fact is known that every cup of so-called good coffee contains not less than four grains of caffein, a poison which is practically identical with uric acid. Urine contains six grains of uric acid to the quart, or one-fifth of a grain to the ounce. It is thus apparent that the average cup of coffee contains fully three times as much uric acid, or its equivalent, caffein, as does the same quantity of urine.

The writer has met a number of cases of tea-tasters' neurasthenia. The symptoms of this disease are now well known, and frequent descriptions of cases of this sort are found in recent medical literature. The following description of a case appeared in the *Journal of Mental and Nervous Diseases*:

"The immediate effects upon him are as follows: in about ten minutes the face becomes flushed, the whole body feels warm or heated, and a sort of intellectual intoxication comes on, much the same in character, it would seem, as that which occurs in the rarefied air of a mountain. He feels elated, exhilarated, troubles and cares vanish, everything seems bright and cheerful, his body feels light and elastic, his mind clear, his ideas abundant, vivid and flowing fluently into words. He has found from experience that the workings of his intellect are really more clear and vigorous than at any other time. This is not a delusion on his part, for at this time he can 'talk a man over,' and make a more advantageous bargain than at others.

"At the end of about an hour's tasting a slight reaction begins to set in; some headache comes on; the face feels wrinkled and shriveled, particularly about the eyes, which also get dark under the lids.

"At the end of two hours this reaction has become fully established, the flushed, warm feeling has passed off, the hands and feet are cold, a nervous tremor comes on, accompanied with great mental depression. And he is now so excitable that every noise startles him; he is in a state of complete unrest and mental exhaustion; he has no courage to do anything; he can neither walk nor sit down, owing to his mental condition, and he settles into a complete gloom. His body in the meanwhile does not feel weary. Copious and frequent urination is always present, as also certain dyspeptic symptoms, such as eructations of wind, sour taste and other conditions.

"The above-described immediate effects follow a single afternoon's tea-tasting. They may be summed up briefly as excited circulation, intellectual intoxication, with actual

increased vigor of mind power, increased urination; then a period of collapse indicated by cold extremities, tremulousness, mental irritability and anxiety. It will be several days before this condition of affairs is amended. And at this time the temptation to take alcoholic stimulants is very strong, indeed.

"The chronic effects are few and decided. Headache is frequent, principally frontal and vertical; a ringing and buzzing in the ears is very constant; black spots often flit before the eyes, and he sees flashes of light. Vertigo also is very persistently present; he cannot look up at a clock on a steeple without staggering. Insomnia exists to a considerable extent; he seldom has a good night's sleep, and he dreams much, but his dreams are of a pleasant character; he sometimes sees visions when not sleeping. Dyspepsia is more troublesome than any of the foregoing three symptoms. This the patient assigns strictly to tea-tasting, since it is made worse by tea, and improves when he abstains from it, though now becoming confirmed. His appetite is capricious, he

feels heavy at the epigastrium, he has eructations and a sour taste, and finds that certain kinds of food distress him. He has a frequent gurgling and is in the habit of 'working' his whole chest and abdomen to make the gas pass off.

"His mental condition is peculiar. He lives in a state of dread that some accident may happen to him; in the omnibus, fears a collision; crossing the street, fears that he will be crushed by passing teams; walking on the sidewalks, fears that a sign may fall, or watches the eaves of the houses, thinking that a brick may fall down and kill him; under the apprehension that every dog he meets is going to bite the calves of his legs, he carries an umbrella in all weathers as a defense against such an attack. He often dreads entering his office for fear of being told that some business friend has failed; and, in short, lives in a state of constant foreboding of some impending evil. At times his left leg drags and feels numb, and he is conscious of an unsteady gait.

"The chronic effects above described, as

distinguished from the immediate effects, are, in brief, vertigo, headache, insomnia, dyspepsia, mental depression, almost amounting to delusions, and also some slight subjective and objective signs of a central disturbance of both sensibility and motility."

Tobacco Neurasthenia

Tobacco neurasthenia is most frequently encountered in young men, especially clerks and others employed in offices, and those following other vocations of a sedentary sort. The well-known effects of tobacco upon the sympathetic system render it especially active in the development of the neurasthenic state.

In experiments on animals the physiologist habitually makes use of nicotine as a means of paralyzing the sympathetic nerve, which it seeks out with unvarying certainty.

The toxic effect of tobacco upon the sympathetic nervous system is shown by the nausea, vertigo, and great depression generally produced by the first pipe or cigar in the would-be devotee of the drug. Trembling of the hands, intermittent beating of the

heart, shortness of breath and loss of endurance, are effects which regularly follow the habitual use of tobacco. No intelligent trainer will permit a man preparing for an athletic event to make use of tobacco in any form. A large proportion of young men who are refused admission to the army at the recruiting bureaus are rejected because of neurasthenic symptoms due to the use of tobacco. The man whose nerves are unsteady and who cannot work without his pipe or cigar has already become a tobacco neurasthenic.

There are tobacco users who notice so little effect from the drug that they can dispense with the usual pipe or cigar without inconvenience. Such persons have not yet become neurasthenic but will sooner or later develop toxic symptoms, such as high blood-pressure, albuminuria, or some chronic affection of the heart, lungs or nerves.

Alcohol and Neurasthenia

Multitudes of neurasthenics resort to alcohol for benumbing their nerve sensibilities and thus relieving their discomforts.

The temporary relief thus obtained never leads to a cure but only intensifies the malady. Alcohol is not a stimulant, and does not increase nervous energy, nor does it enable the nerve cells of the body to increase their output of energy. Alcohol is a narcotic. It lessens the output of nervous energy as certainly as do all other narcotics. It produces its effects by lessening sensibility. It hampers digestion, cripples the heart, damages the kidneys, hardens the liver, and works havoc with every tissue and function of the body. Its effects are evil, and only evil. The apparent benefit it affords is a delusion and a snare by which the attention of the user is diverted from the real cause of his trouble, with the result that he is lured on to greater disasters.

Treatment of Drug Neurasthenia

Drug neurasthenia is of all forms of this disease the most amenable to treatment. The withdrawal of the particular drug or drugs to which the victim of drug neurasthenia has been addicted is almost invariably followed by a rapid recovery. The chief difficulty in

dealing with these patients is to get the patient over the first few days of discomfort which must naturally follow the withdrawal of the drug. By the use of appropriate measures, however, the distress usually suffered in this transition period may be very greatly mitigated and in many cases almost wholly overcome. Patients who have been dependent upon tonics, at first feel somewhat let down when the drug is withdrawn, but by the tonic applications of cold water, that have been recommended in previous chapters, and by other measures, the nerve tone is rapidly built up and the patient soon feels a real increase in vitality and vigor; and he realizes that his improvement rests upon a substantial basis, which could not be the case from the use of any drug.

Hypnotics are easily dispensed with when the methods recommended in the present volume are faithfully employed. There is no hypnotic drug which possesses half the power to produce healthful sleep as does the neutral bath. Tea and coffee and tobacco may be discarded at once and with im-

mediate advantage. The tapering off plan seldom succeeds and requires more resolution than immediate and complete dropping of the drug. The nervous and other distressing symptoms which sometimes follow the disuse of these drugs are very promptly relieved by such simple measures as the neutral bath, hot and cold applications to the spine and fomentations to the abdomen, followed by vigorous rubbing. Fomentations of the abdomen are particularly useful in case of persons who have been addicted to the tobacco habit, because of the especial pernicious influence of tobacco upon the sympathetic nerves and nerve centers, as well as the splanchnic vessels.

Professor Kreuzfuss, of Vienna, has shown that arteriosclerosis of the abdominal vessels is a common result of tobacco using and, according to Doctor Janeway, of New York, a single cigar is capable of raising the blood-pressure twenty points in thirty minutes. High blood-pressure is a very common symptom among smokers. Application of heat to the abdomen relieves the

irritation of the sympathetic system and exercises a highly favorable influence upon the abdominal circulation.

Sweating baths are also useful in these cases as a means of aiding the elimination of the drug and accumulated waste matters, thus preparing the way for thorough tissue regeneration.

In cases in which the drug habit has been formed in consequence of an existing neurasthenia, it is evidently necessary that thoroughgoing measures should be adopted for the cure of the primary disease.

In addition to the special methods recommended above, the drug neurasthenic must become a faithful adherent to the simple life rules which have been fully outlined in another chapter.

Drug neurasthenics are always subject to fits of depression, especially when any attempt is made to stop the use of the drug or to lessen the dose. The reason for this depression is the overstimulation of the suprarenal capsules which will gradually disappear when the drug is withdrawn.

Religious Neurasthenia

THE venerable Bishop Vincent, of Chautauqua fame, once remarked in a public address: "Some people think they have experienced religion when they have only had a bilious attack." Such persons are generally religious neurasthenics. Their creed is a neurasthenic theology and their religion a refined sort of pessimism. They discern on every storm cloud the face of an angry Providence, and interpret every calamity, personal or national, as the visitation of the wrath of God. These unhappy souls live under a perpetual shadow because of their perverted ideas of life here and hereafter.

A religious neurasthenic may be in part a product of wrong education. The morbid ideas entertained by these unfortunate people are by no means held by a few individuals, but are widely current in certain religious communities, whose neurasthenic leaders are often regarded with a sort of

reverent awe. The writer has met not a few of these unhappy folks, whose lives were made joyless, and in many cases hopeless, by pessimistic religious views and the melancholy piety which they cultivated.

Both Body and Mind Need Care

Neurasthenia is active, both as a cause and a consequence, in these cases. An improved physical condition often leads to an improved state of mind. For complete cure, the appropriate measures must be applied to both mind and body. Not a few such persons have been helped by embracing Christian Science, or the Emmanuel Movement. While Christian Science is not scientific, nor altogether Christian, it must be acknowledged that many through its influence have been helped to a comfortable, happy and useful life, but unquestionably the same results might be attained without Christian Science.

From a logical standpoint Eddyism is neither science nor philosophy. Nevertheless, some of the ideas presented by this curious cult, though not peculiar to or origi-

nal with it, are sound and wholesome. Mrs. Eddy herself was unquestionably a neurasthenic. It is probable that a very large proportion of her followers are also neurasthenics. Christian Science, in the absence of a more rational remedy, may be of service to these sufferers, and the writer is quite willing to give the cult whatever credit may be due it.

The real cure for religious neurasthenia is to be found in a broader concept of God and His universe, and a healthier and sounder faith. An abiding confidence that "the Judge of all the earth will do right" by every human being ought to cast out fear. "In quietness and confidence shall be your strength," said the ancient prophet.

Sexual Neurasthenia

THE sexual neurasthenic is the most difficult type with which the physician has to deal. In the majority of cases the patient is a victim of sexual excesses or perversity of some sort, although in some cases no doubt the sexual errors have been provoked by the neurasthenic state.

The majority of subjects are young men, although young women are not exempt. The symptoms described by these sufferers present a sorry picture of mental and moral obliquity which cannot be put in print. The patient persistently reiterates his morbid feelings as often as the physician or anybody else can be induced to listen to them. He has usually tested the virtues of all the patent medicines advertised in the newspapers, and has been victimized by every quack within reach, and unfortunately is in too many cases so far deteriorated in moral character and will-power that little can be accomplished for him. Patients who are

willing and able to cōoperate with intelligent efforts made in their behalf can usually be greatly helped, often entirely cured. Not a few are really more frightened than sick, as the result of reading patent medicine advertisements and the sensational literature sent out by so-called "specialists." These cases are most hopeful and are quickly restored when relieved of the apprehension with which they have been wrongfully inspired.

Wholesome Mental Occupation Important

The sexual neurasthenic needs first of all a thorough mental purging. This can be accomplished only by wholesome mental occupation. It is no use to exhort the patient to keep his mind off sexual subjects. The more he tries to do this, the more impossible it becomes. The enemy must be routed by a flank movement. The attention must be diverted into other and wholesome channels, and both mind and body must be fully occupied by wholesome work of some sort.

Drugs of all sorts must be abandoned. Continence of mind and body must be an ab-

solute rule. The advice given young men, and even young women also, by certain physicians who recommend immorality as a remedy is most pernicious, and wholly unwarranted by any fact or principle recognized among reputable and scientific medical men.

The Simple Life Must be Religiously Lived

The sexual neurasthenic, like the sufferer from chronic fatigue, must live the simple life most religiously. He must turn away from every vicious practice and must set his face resolutely toward the highest ideals of Christian manhood. He needs, above all others, the help afforded by a deeply religious life.

The sexual neurasthenic, too, of all others, needs the aid of a wise and an experienced physician. In general, the methods outlined in preceding and following chapters will be found of great service. In some cases, local treatment which can be properly applied only by a skilled specialist is essential to complete recovery.

Christian Science, Emmanuel Movement, Hypnotism

THE writer's views in relation to Christian Science together with other similar movements and hypnotism, are set forth in the following extracts from lectures on the subject, delivered at different times before the patients of the Battle Creek Sanitarium:

Christian Science a Misnomer—Neither Scientific nor Christian

No Christian theologian would admit that the theory or the so-called philosophy of Christian Science is in harmony with the recognized doctrines of Christianity; and certainly no scientist for a moment would admit that the so-called Christian Science or philosophy is worthy of the dignity attached to the word science. Indeed, from a logical standpoint, the teachings of Christian Science are a veritable quagmire of irrational

thought. Notwithstanding, it cannot be said that there is nothing good in Christian Science, yet I do assert that what is good in it is not new, and what is new is not good. Christian Science is neither scientific nor Christian. It is not scientific because it seeks to destroy the very foundations of science. It declares that the very things with which science deals, things which we feel, taste, touch, smell, do not exist; that material objects have no existence. Now this is not a new idea. Bishop Berkeley brought forward this idea long years ago. He declared that matter was but an idea—a mental picture. Lord Byron, when once asked what he thought of the theory, replied, "When Bishop Berkeley said, 'There is no matter,' 'twas no matter what he said."

One of the Inconsistencies of Christian Science

Mrs. Eddy placed herself in the same situation. If the theory is true, then she herself was no matter, neither is her book. The millions of dollars she made out of the sale of her books, which cost a few cents a

copy and sell for five dollars, are also no matter. And it seems very strange that she and her trustees should have been so disturbed at the attempt upon the part of some of her relatives to get possession of some of Mrs. Eddy's immaterial wealth.

In reading the writings of Mrs. Eddy one finds no real system of philosophy, no logical relation of ideas. The teaching is a hodge-podge. Some one has called it a "junk shop of effete fancies." To become convinced of this it is only necessary to read early editions of her books. The works are their own best refutation.

The False Basis of Christian Science

The foundation stone on which she bases her "science" is this: God is good; God created all things and pronounced all things good; a good God cannot create an evil thing. Disease, pain, sin, crime are evil things—therefore they do not exist. Now that is simply sophistry. It may look straight enough, but it is not sound reasoning.

Bad Logic

In the first place pain is not a thing—disease is not a thing, using the word in the sense in which we say: "God created all things." God created all objects, but he did not create all relations or all conditions of all objects. God created man, but not man's actions. If a man stubs his toe and falls down, God does not create the fall. God created all original objects, but man and other intelligent creatures are also creators. "God made the country; man made the town." God makes trees; man makes houses. The fundamental error of Christian Science rests on this confusing use of the word "things." The fundamental proposition is false. Disease, distress, sin—these come from the establishment of wrong relations of things. These are man-created. Mrs. Eddy says disease and pain are simply "morbid ideas." It would be rather difficult to convince a man suffering from toothache that he had simply a "morbid idea." Mrs. Eddy insists not only that there is no such thing as toothache, but that there can-

not be such a thing as toothache, since there is no tooth to ache.

Matter Not Actual, Says Mrs. Eddy

Here are a few items of Mrs. Eddy's so-called philosophy, copied from her books. In describing the "inspiration" or revelation of Christian Science as she claims it came to her, she says: "The great facts of omnipotence and omnipresence, of spirit possessing all power and filling all space, these facts contradicted forever to my understanding the notion that matter can be actual. These facts also revealed to me primeval existence and the radiant realities of good; and there was present to me, as never before, the awful unreality of evil."

Again: "By mind alone I have prevented disease, preserved and restored health, healed chronic as well as acute ailments in their severest forms, elongated and shortened limbs, relaxed rigid muscles, restored decaying bones to healthy conditions, brought back the lost substance of the lungs and caused them to resume their proper functions."

Disease Non-existent, Says Christian Science

"It is no less than mental quackery to make disease a reality, hold it as something seen and felt, and then to attempt to work its cure through the Mind. It is no less erroneous to believe the real existence of a tumor, a cancer, or decayed lungs.

"It is morally wrong to examine the body in order to ascertain if we are in health; because this is to take the government of man out of the hands of God.

"Because Man is the reflection of his Maker, he is not subject to birth, growth, maturity or decay. These illusions are of human origin, not Divine."

"One disease is no more unreal than another. All disease is the result of hallucination and can carry its ill effects no further than mortal mind maps out. Facts are stubborn things. Christian Science finds the decided type of acute disease, however severe, quite as ready to yield as the less distinct type and chronic form of disease. It handles the most malignant contagion with perfect assurance."

"The uselessness of drugs, the emptiness of knowledge, the nothingness of matter and its imaginary laws, are apparent as we rise from the rubbish of belief to the acquisition and demonstration of spiritual understanding."

"Christian Science is sunlight to the body. It invigorates and purifies. It acts as an alterative, neutralizing error with Truth. It changes the secretions, expels humors, dissolves tumors, relaxes rigid muscles, restores carious bones to soundness."

"Nothing but mortal belief gives colds and coughs, or circulates contagion."

"You say a boil is painful; but that is impossible, for matter without mind is not painful. The boil simply manifests your belief in pain, inflammation and swelling; and you call this belief a boil."

"The sick are never really healed by drugs, hygiene or any material method. These merely evade the question. They are soothing syrups to put children to sleep, satisfy mortal belief and lull its fears."

"Is civilization but a higher state of idola-

try, that man, in the nineteenth century, should bow down to a flesh brush, to flannels and baths, to diet, exercise and air? Nothing is able to do for him what he is able to do for himself with Omnipotent aid."

If the above propositions, or rather, assertions, are true, then thirst is never quenched by drinking water, nor hunger satisfied by taking food; dirt is never removed by soap. And yet "Christian Scientists" eat, drink, and make use of soap (a drug) as do other people. Before the more intelligent and level-headed portion of the community will ever be converted to "Christian Science," it will be necessary for the devotees of this cult to demonstrate their independence of material things, by dispensing with food, drink, soap, flannels, baths and air.

Christian Science Really Opposed to Christianity

Christian Science is not only opposed to all real science, but it is diametrically opposed to Christianity. "Man is incapable of sin

and death," says Mrs. Eddy. Why, then, is this so-called philosophy called Christian? What is the province of Christianity unless to save from sin and death? If a man is incapable of sinning or of death, if there is no sin or death, then what need of Christianity? Christian Science leaves no place for Christianity.

Now, there are some things in Christian Science that are good. The philosophy is bad—absurd, unbelievable, incredible to the intelligent individual; but it is true that thousands have found relief, comfort, and even health in it. There is unquestionably something in it that is practically good. The good element in Christian Science is faith. The man who buys a gold brick is happy so long as he thinks he has the real thing and just as happy as though he were the possessor of a lot of gold. So the believer in Christian Science may be helped, not by Christian Science, but by his own faith.

When Christ healed the woman who came to him he said: "Thy faith hath made thee whole." It is a fact that many sick people

are merely haunted by hobgoblins, ghosts of maladies which they do not have. If a Christian Science "healer" is called in such a case, he may exorcise the hobgoblin and a cure is effected. If Christian Science would only be more careful in its selection of cases it would have a larger number of successful "cures."

THE EMMANUEL MOVEMENT

Christian Science has at last a rival which threatens to become a powerful competitor. The Christian Scientists have had things pretty much their own way. Only now and then has a Dowie or a Paul Castor or some other professed "healer" undertaken to dispute the field with the followers of Mrs. Eddy.

A few years ago the rector of an Episcopal Church in Mrs. Eddy's own town began a work which made considerable headway under the name of the "Emmanuel Church Movement."

From the standpoint of an onlooker there seem to be many points of similarity between

Eddyism and this new movement within the ranks of the church:

1. Mrs. Eddy teaches that disease exists only as a morbid idea.

The Emmanuel Movement regards disease as the result of morbid mental states, at least so far as functional disease is concerned, and this really is tantamount to saying all forms of disease, for organic disease begins with functional derangement.

2. Mrs. Eddy teaches that disease may be cured by mental methods applied to the patient by one who has been instructed.

Doctor Worcester and his colleagues teach that disease may be cured by "psychic suggestion," applied by specially qualified persons.

3. Mrs. Eddy claims for herself and her healers a personal power or authority to control the vital processes of other persons, so making possible the cure of disease by them.

Says the Emmanuel healer to the patient, "I can cure you absolutely."

The Emmanuel Movement differs from

Eddyism in that it claims to be strictly in harmony with modern science, while Mrs. Eddy utterly repudiates all that is commonly recognized as science. In operation and effect, however, there is little difference between the two.

Doctor Worcester operates through "suggestion" and "hypnotism," methods long in use by certain specialists and by numerous charlatans.

The history of hypnotism, formerly called mesmerism, dates from Mesmer, a charlatan whose sensational cures were the wonder of Paris more than a century ago. Benjamin Franklin was living at the time in the French capital. The great statesman-philosopher was a member of a committee appointed by the French Academy to investigate the new method of exorcising disease. Mesmer claimed the cures to be wrought by means of a magnet in a tub with which he connected his patients by means of handles. Franklin replaced the magnet by a wooden imitation and the "cures" continued as before. Whereupon Mesmer, nothing daunted,

announced the discovery that the healing power lay in himself. This was the genesis of animal magnetism.

Mesmer has had a host of successors in and out of the profession, who have claimed special power over disease, and the ability to control by the action of their own minds the operation of other minds and bodies through occult means.

Modern psychologic science has explained the curious phenomena of mesmerism and named it hypnotism. The explanation is this: By various means an individual may be brought into a state of mental vacuity or abstraction. While in this condition, the so-called hypnotic state, ideas communicated to the subject's mind may become the controlling factors in his conduct, and may even temporarily influence his bodily functions. "Suggestion" is the term used to designate the presentation of ideas to the mind of the subject without the hypnotic state, either during the ordinary waking condition or during natural sleep.

Hypnotism Found Wanting

Hypnotism has been carefully studied by the most eminent neurologists, and has been found wanting. Professor Charcot, the great French neurologist, after years of investigation and constant experiment, discarded it as a means for general application. The able editor of the *British Medical Journal,* perhaps the most authoritative and influential of all medical journals, some years ago made an exhaustive inquiry into the question of hypnotism, the result of which was the publication of a most decided and positive condemnation of this psychic method as a curative means. The baneful influence of hypnotism upon the mind of the hypnotized, and the failure of the method to accomplish permanent good, were clearly pointed out.

There have been, and still are, schools of hypnotism and clinics where hypnotism is the chief method of treatment, but with the lapse of time the confidence of the medical profession in this psychic method has, instead of

increasing, notably diminished, until at present a practitioner who resorts to hypnotism as his general mode of practice, or as a specialty, is commonly looked upon with suspicion.

The Hypnotist is a Deceiver

And there is good reason for this mistrust. The hypnotist is necessarily a deceiver. The whole success of his art depends upon the belief of the patient that the hypnotist possesses an occult power by which he can influence the mind or body of the subject, or both. This is a false belief. It has not the slightest foundation in fact; yet unless the subject has full confidence in the supposed powers of the hypnotist, no impression can be made.

Again, the hypnotist impresses the subject by making most positive statements without being at all certain that he is telling the truth. For example, in the case of a chronic inebriate the following words were pronounced to the subject by an Emmanuel Church healer: "You are going to sleep. You

are sinking deeper into sleep. No noises will disturb you. You will drop off to sleep. You are asleep (these words being repeated many times, the patient actually fell asleep). I told you before you were not to drink any more. I told you that you could not yield again to the drink habit. You cannot drink any more."

Now it was impossible to say with truth, "You are going to sleep," or, "You cannot drink any more." It was all supposition, the untruth of which the subject might discover. The hypnotist is constantly making statements of this kind, well knowing that in many instances his statements will prove absolutely false. He says to the victim of insomnia, "You will sleep. Yes, you are getting sleepy now. You are dropping off to sleep! There, you are asleep." If the experiment succeeds, the statement proves true, but it is a falsehood when it fails. So far as the hypnotist is concerned, such a statement is really untrue when made. It is a presumption made for the purpose of impressing the patient. If the subject believes

it, the assertion is verified in fact; if he doubts, it proves false.

So the hypnotist is a professional deceiver. When he says to the patient in the most positive manner, "You are going to sleep," he is not at all certain himself that the patient will sleep. His effort is purely experimental.

Effects upon the Mind Injurious

But there are other than moral objections to hypnotism, as was well pointed out by the eminent Doctor Hart, of the *British Medical Journal.* The effect of the hypnotic state upon the subject is not wholesome. The false belief upon which the success of the art depends, exercises an unwholesome effect upon his mind. He feels that a spell has been cast over him. He believes that another mind and will than his own have control of him. His selfhood is weakened.

Hypnotists Cannot Hypnotize Hypnotists

Studying hypnotism more than twenty-five years ago in the clinic of the famous Professor Charcot, at the Salpetriere, Paris, I

was impressed particularly by the weak and foolish expression commonly seen upon the faces of subjects after coming out from the hypnotic state. Doctor Hart and many other authorities assert that the hypnotic state is a diseased condition, a morbid state which is made worse by repetition. That it is a condition impossible to a healthy and fully informed mind is not to be doubted for a moment. Conceive, if possible, of one professional hypnotist hypnotizing another. They would be like the augurs of ancient times who dared not look one another in the face, in public, for fear of laughing.

Now there recently appeared in the public prints the following:

"The Emmanuel Clinic conducted by Rev. Dr. Frederick Campbell in Brooklyn, New York, has been given up, Doctor Campbell having resigned his pastorate on account of impaired health." Consistency would have added, "and gone to Boston to place himself under hypnotic treatment at the Emmanuel Church;" but no such announcement was made.

My first impression of the Emmanuel Church Movement was that it was essentially a religious movement. It commaned my entire sympathy and support. But later the fact came to light that it was hypnotism in a new dress, or in a new environment. Instead of the hospital, the church; instead of the physician's office, the pastor's study; instead of a physician, a preacher; instead of a man armed with a knowledge of all that modern science has developed of natural physiologic means of cure and prophylaxis through natural agents and natural habits, a hypnotist with the deceptive air of occultism, the mysterious pose, the bald deception, the false belief on the part of the patient, the voluntary surrender of a weak will to a stronger.

Wherein is Hypnotism Different from Mesmerism?

It is impossible to suppress the query: Is hypnotism under the name of the Emmanuel Church Movement essentially different from the hypnotism of Mesmer and Charcot?

Does hypnotism in a church differ from hypnotism in a hospital? Is deception practiced by a clergyman less sinful than deception by an ordinary mortal? Is a hypnotic seance begun with a hymn and a prayer, and closed with the doxology, less objectionable than a hypnotic seance in a doctor's office? Admitting that the medical profession has neglected the psychic side of therapeutics, is it likely that any great good is to be accomplished by the clergy through the use of means which the medical profession has tested for half a century and found wanting? That is to say, is hypnotism less reprehensible and unwholesome because its horns and hoofs are concealed by an ecclesiastic cloak and halo?

Finally, is the cause of religion likely to be in any way benefited through the substitution by its ministers of the deceptions and falsehoods of hypnotism and psychologic juggling for the simple faith of the gospel? And has the hypnotist or the psychologist any better means of "suggestion" than the old-fashioned method which through all the

centuries has worked and is still working wonders, when it is not relegated to the rear as out-of-date and unscientific—simple, honest prayer?

The New Confessional

Incidentally another phase of the Emmanuel Church Movement has come to light. Says one warm advocate of the Movement, "Sufferers invariably want some one to whom they can unburden their hearts. There is where the confessional of the Roman Catholic Church has done a world of good."

This may be true, but is there no one save a Catholic priest or an Episcopal priest, or a hypnotist, to whom a penitent sinner can confess his sins, and from whom he may expect comfort and sympathy adapted to his needs? Has the religious world reached the point where another Martin Luther is needed to preach the gospel of the Fatherhood of God, the Brotherhood of Christ, and the efficacy of Christian faith? Whatever good there may be in hypnotism, there is only one Master Mind that can be trusted.

To be divinely inspired is the only hypnotism which is safe. Confession is good, but there is only one Ear which can be safely trusted with all the heart's secrets. Sympathy is good, but only one Great Heart can offer just the measure and the kind of sympathy which a sorrow-laden soul needs to lighten its load. Friendly sympathy is certainly helpful, but professional sympathy is a cheap substitute, well calculated to encourage a class of morbid neurasthenics who find their greatest delight in the rehearsal of their miseries.

Our judgment may be wrong, but it really looks as though the Emmanuel Church Movement is a religio-scientific substitute for both scientific medicine and the good, old-fashioned Bible religion, a New Thought, religio-medico-sociological movement, a more or less orthodox rival of Christian Science, and with a foundation not much better.

The Emmanuel Movement Misses the Mark

When a huntsman sets out to kill, he first of all finds his game, then takes sure aim and

fires. He does not shoot at the wolf's track, nor at the heap of bones where it made its last meal, nor yet at its bark. He sends the bullet to the heart or brain. He shoots, not to scare the brute, but to kill.

A vital fault with the Emmanuel Movement in dealing with the sick is the fact that it aims at the bark or the bite of the body's assailant instead of the attacking element itself. Nervousness, depression, headaches and hypochondria are not entities, nor causes. They are effects. With these mental effects there are always associated many purely physical signs of vital depression and bodily disorder. They are only the mental expression of a state which is universal in the body.

A coated tongue, a bad breath, a dingy skin, malodorous perspiration, constipation, loss of appetite, lack of energy and endurance; highly colored urine, the presence of putrefactive poisons in the urine, foul smelling stools alive with putrefactive and poison-forming germs—these, and a score of other symptoms, are just as much a part of the

complete picture of hypochondria as is the depressed mental state. The man whose blood is loaded with the products of putrefaction is intoxicated just as really as though he had swallowed alcohol or any other brain-obfuscating drug. Whether the poison is compounded in a chemist's laboratory, or is generated in his own colon is not a matter of any moment, except that germ poisons are generally far more potent and deadly than the most powerful drugs.

To imagine that these poisons can be cast out by suggestion, or that the germs which produce them can be destroyed by hypnotic passes, even when administered with religious fervor and in a church or a pastor's study, is to hark back to the time when all maladies were demons, and remedies consisted of incense, cabalistic formulæ, amulets and relics of saints.

In the case of insomnia, for example, the wakefulness is usually due to one of two causes: too much blood in the brain, or the presence of irritating poisons in the blood.

Both conditions may be present, and generally are.

The excess of blood is due to contracted blood-vessels in some other part, usually the extremities—which are often cold—and especially the skin, as shown by pallor or a dingy or sallow hue.

The sleep-hindering poisons are the result of imperfect action of the poison-destroying, or poison-eliminating, organs of the body. The usual source is putrefaction of undigested foodstuffs in the intestine, especially remnants of flesh-foods; and constipation, which retains the fecal matters and thus leads to the absorption of putrefaction products. Massage, the wet sheet pack, or a warm bath will fill the skin with blood, and thus relieve the congested brain. A change of diet and measures to secure proper bowel action will remove the brain-irritating poisons from the blood.

These measures are succeeding in hundreds of cases daily in sanitariums and hospitals for the insane, where victims of insomnia are numerously represented.

But how may the skin vessels be relaxed, or the blood-poisons and colon germs be destroyed, by putting the patient in an easy chair and saying to him, according to Doctor Worcester's formula: "You are going to sleep; you are sinking deeper into sleep. No noises will disturb you. You will drop off into sleep. You are asleep"?

There are, of course, certain persons really ill who can be wheedled into the idea that they are well when they are not; but the delusion will in time disappear, and the old condition will assert itself because the originating cause has not been reached and eradicated.

Physical Remedies Needed for Physical Ills

But physical maladies must have physical remedies. A patient whose insomnia is due to autointoxication arising from constipation must be relieved of the constipation before permanent improvement can be secured, no matter how much temporary relief may be secured by suggestion or hypnotism.

We have no disposition to ridicule the Emmanuel Movement, nor to question the

motives or purposes of its able promoters; but we feel compelled to recognize the fact that the work is not thoroughgoing. We admit that there are exceptional cases in which insomnia, hypochondria, and other nervous diseases may be due to purely psychic causes, and hence may be cured by psychic remedies, but these cases are certainly very rare.

Functional nervous disorders in general are not due to bad mental states, but to bad habits. The use of tobacco and of tea and coffee, the flesh-eating habit, hasty eating, sedentary life and neglect of the bowels, are responsible for a thousand cases of nervous diseases where pessimism is responsible for one. Indeed, most of the pessimism is due to a high-protein diet, or may be traced to others of the causes named as productive of intestinal toxemia with its innumerable bacteria and nerve- and brain-disturbing toxins.

There are many most admirable features in the Emmanuel Movement. Its kindly philanthropic aims, its brotherly spirit, its

good cheer and helpfulness in so many beneficent ways, are most commendable; but it is to be hoped that the hypnotic element may be eliminated, and the principles of rational living added.

Hypnotism is not a competent substitute for Christian faith, and has about as much affinity for good religion as oil has for water. The two will not mix.

Twenty years ago hypnotism was most enthusiastically commended by a large number of eminent neurologists, but this method has certainly failed to make good and is now universally condemned. There are several reasons for this.

Neurasthenics Hypnotizable Only When Hysterical

1. Neurasthenics, when not hysterical, are not hypnotizable. Healthy persons cannot be hypnotized, at least only to a slight degree, and then only in very rare cases. To be a good hypnotic subject, one must be mentally diseased to such an extent that his personality is profoundly changed,

a condition which is only found in pronounced hysteria.

Often Makes Patients Worse

2. Another objection to the employing of hypnotism in neurasthenia is that it sometimes makes the patient very much worse rather than better. A person who can be hypnotized has a weak will. Hypnotization weakens the will of the subject more and more, the more frequently it is employed.

Does Not Reach the Root of the Disease

3. A third and really fundamental objection to hypnotism is that, with rare exceptions, it does not reach the actual root of the disease. This is equally true of Christian Science and all other forms of mental therapeutics or psychotherapy.

Inspiring Confidence by Means of False Claims

4. A final and sufficient objection is the fact that the successful practice of hypnotism requires that the patient should be made to

believe what is not true. The hypnotizer must inspire confidence by false claims of power over the subject's mind and will. Hypnotism is impossible without fraud and pretense.

THE FREUD METHOD

In very recent years much discussion in medical circles has been aroused by the theories and methods proposed by Freud, of Germany.

Freud believes that all cases of neurasthenia are the outgrowth of some disturbance of the sexual life. He holds that most of these disturbances occur in childhood and may occur even in infancy. Cases of neurasthenia in which no cause of this sort is discoverable are termed by Freud, "anxiety-neuroses."

The "Unconscious"

Freud holds that in cases of neurasthenia there is a mental state which he terms "the unconscious," in which are held outside the realm of consciousness the injurious impressions or ideas which have been combated, and so repressed and forced below the level of

consciousness. The morbid manifestations of neurasthenia and hysteria he believes to be the result of the efforts of these repressed ideas and impulses to find expression. Freud holds that the only relief for this condition is to be found in the discovery and expression of these repressed ideas.

Freud's mode of treatment, which is strictly psychic, consists in a careful analysis of the patient's mental states, both waking and when asleep. He has developed a theory of dreams through which he seeks to find by the study of the dreams of neurasthenic or hysterical persons the real beginnings of the departure from the normal condition. The cure consists in the discovery of this occult cause, by means of which it is brought into the field of consciousness and so rendered powerless for mischief. Experience has shown that these morbid and repressed ideas and impulses are potent for evil only while retained in the so-called "unconscious" mind.

Freud has acquired quite a following among neurologists who have studied his

works, and the application of his methods has been apparently attended with some degree of success in obstinate cases of neurasthenia that have resisted all other methods. The methods are exceedingly tedious, however, requiring from six months to three years to secure results, during which time the patient must remain constantly under close observation by a highly trained specialist. In the writer's opinion this method is fundamentally deficient in the fact that it makes the cause of neurasthenia purely and strictly psychic, and ignores the tremendous influence of various morbid states, particularly autointoxication or intestinal toxemia. In general the theories of Freud seem to be fine-spun, and certainly the success of his method does not compare with that attained by a thorough-going application of the physiologic method, the outlines of which are presented in this work, and the application of which in a thoroughgoing way often secures most gratifying results in a wonderfully short time.

Worry — How It Kills and How to Cure

WORRY, like hate, anger, envy and all other depressing emotions, is a poison. It is a short circuit which burns out the mental batteries and destroys the power for useful activity. It is of little use, however, to tell the neurasthenic not to worry. He suffers from worry just as he suffers from headache, cold hands and feet, and other ailments. The neurasthenic worries, not because he wishes to, but because his mind operates in this disordered fashion in spite of his desire to the contrary. He can no more help worrying by voluntary effort than he can stop the smarting of a burn or the itching of a mosquito bite by a mental effort. Nevertheless, the patient can do much to help himself out of the worry habit, by an effort to cultivate an optimistic view of life in general, and in each particular situation that presents itself. And by intense mental occupation one may exclude worry just as one

may become so completely absorbed in mental or physical effort as to become totally oblivious to many physical discomforts.

First of all it is important to understand the nature and deep-lying causes of this malady, for worry is not simply a habit; it is a real disease. It is not merely the surrender of the will to morbid fancies or imaginary causes of anxiety; it is an actual disease, a real physical state, as much as indigestion, rheumatism, or any other bodily disease.

Within the last few years the emotions and their influence upon the body have been made the subject of laboratory study, and numerous highly interesting, important, and practical facts have been developed by these critical observations upon human beings and animals. It is true that the question, "What is an emotion?" still remains unsolved, as does the greater and nobler question, "What is the mind?" But the influence of the various emotions upon the body are now fairly well understood, and can be described in definite physiologic terms.

The emotions are perhaps among the most powerful of all the influences which affect the body, and the specific effects of the various emotional states present as definite, clearly-defined characteristics as do the effects produced by heat, cold, electricity, and other physical agents, or such bodily states as hunger, thirst, and fatigue.

Joy, sorrow, anger and fear, as well as other emotional states, are powerful forces which may exalt or depress bodily functions as quickly and as powerfully as the most potent drugs or the most active physical agents. Prof. C. Lange, a Danish writer, in a somewhat voluminous work presents a critical study of the several emotions, in which he shows that each is associated with definite physical states, and clearly demonstrates that an emotion is a bodily state, and not simply a mental or spiritual experience. Numerous other psychologists and physiologists working in the same field have arrived at essentially the same conclusion, especially in recent years.

As a result of these labors it is now

known, for example, that joyful emotions heighten the activity of all the bodily functions. Under the influence of joy the small arteries and capillaries dilate, and every organ receives an increased and more active blood supply. Through the influence of joy upon the muscular system there is not only an increased disposition to activity, but an increased capacity for effort and endurance. The heart beats stronger, the brain thinks clearer, breathing is deeper, digestion more active, the eyes brighten, the cheeks glow with health, the whole body rejoices and prospers under the influence of a peaceful, contented, and joyous mental state.

Cannon, in his experiments on digestion in the cat, noted that so long as the animal was in a happy and contented mood, as shown by purring, digestion proceeded regularly and actively. Under the x-ray the stomach could be seen to contract on the food, mixing and sorting it, passing on the liquid portion into the intestine. When the purring ceased from annoyance, digestion ceased.

Modern scientific research has demonstrated the physiologic soundness of the ancient proverb, "A merry heart doeth good like a medicine."

Sorrow produces a bodily condition quite the opposite of that produced by joy. Under the influence of sadness, all the bodily functions are depressed. The muscular system is relaxed and weakened. The sorrowful individual has the appearance of one who is exhausted or fatigued. The frequent sigh is simply Nature's effort to make up by a deep breath the loss of oxygen which results from the decreased activity of the chest. There is a physiologic basis for the current expression, "Weighed down with sorrow."

The effect of sorrow upon the internal organs is most profound. The external blood-vessels are contracted, causing pallor or sometimes a livid appearance due to diminished circulation through the skin, the hands and feet are often cold, secretions are diminished, in consequence of which the mouth is dry. As a result of the dryness, bacteria grow in the mouth, the tongue be-

comes coated, and bitter substances are produced which may be the reason that we speak of sorrow as "bitter."

The starving, sorrowful mother becomes unable to furnish food for her nursing babe. The springs of life seem to be dried up, the sensibilities are chilled, benumbed, the mental faculties dulled—the whole body withers under the baneful influence of chronic grief. Doctor Allbut, an eminent English authority, offers proof that prolonged sorrow may even lead to organic changes such as atrophy of the kidneys, which he observed in a number of cases.

Fear, like sorrow, produces a weakening, sometimes a complete paralysis of the muscles. There is at the same time a contraction of the blood-vessels, which gives rise to pallor. The influence of fear upon the involuntary muscles is clearly shown in the increase of the heart beat, and the formation of goose pimples, sometimes accompanied by a sensation of chill. The pupils of the eye dilate, through the powerful impression made upon the sympathetic nerves.

Through the stimulation of the same set of nerves, the bowels and bladder sometimes evacuate their contents. Extreme terror has sometimes produced such powerful impressions upon the body as to cause paralysis, insanity, or even death. The physical results, while usually temporary, sometimes persist for months, or may even become permanent.

Worry is akin to fear. It is, in fact, a sort of chronic fear. In its most intense forms, worry almost reaches the proportions of actual terror. A man who worries over his task, is almost defeated in advance. To anticipate failure is to invite it through the medium of suggestion. Worry, like other depressing emotions, while doubtless dependent upon physical states, reacts upon the body in the most pernicious way, forming a vicious circle. While worry is generally regarded as a depressed mental state, it is, nevertheless, in actual fact, a state of increased activity. This fact leads to the most disastrous consequences. The brain exhausts its stores of energy through ineffective mental and nervous action.

During sleep and rest, brain and nerve energy are stored. A microscopic examination of the brain and nerve cells of animals, if made in the rested state, shows the cells to be plump and well packed with minute granules, each of which is a little packet of energy, which may be compared to a percussion cap or gun cartridge. After prolonged and exhausting exertion, the nerve cells are found to be shrunken and pale, containing few energy granules.

The store of nervous and mental energy may be compared to the miller's pond. The full pond means a full store of power to propel the water-wheel, which in turn runs the mill. Worry is like a leak in the mill dam, which drains the pond, so that the water-head is low, the wheel turns feebly, and the mill grinds slowly or not at all. Worry adds to the necessary energy expenditure involved in work an additional energy loss which is absolutely unproductive.

But the influence of worry upon the body is not confined to its effect upon the mental processes. Its influence upon the great

pneumogastric nerve and the sympathetic, as well as in other ways, produces most profoundly pernicious effects. Through the intercommunication of the vagus or sympathetic, and the vasomotor nerves, the action of the organic functions is maintained and regulated. It is through the influence of these nerves that the action of the heart, lungs, stomach, liver, pancreas, kidneys, bowels, and other vital organs, is maintained and constantly regulated to suit varying conditions of environment and activity. For example, the sympathetic nerve stimulates the heart to action. The vagus nerve exercises a controlling or regulating influence by which the heart's action is made more vigorous and effective. Without the influence of the vagus the heart runs away so to speak, and soon exhausts itself.

The effects of worry are essentially those of overwork, and one of its effects is to diminish the controlling power of the vagus nerve, while at the same time exciting the sympathetic to increased activity; thus the pulse is accelerated, the heart beats rapidly,

the lungs are congested, the skin is pale, the extremities cold, the pupils dilated, the body loses weight, sleep is disturbed and unrefreshing, and the body falls into a state of exhaustion. The muscles, while weak, seem to be tense—the irritability of weakness. Muscular twitching is common. Nearly all these symptoms are readily explained by the influence of worry upon the sympathetic nervous system.

The pupils dilate because of exhaustion of the cranial nerves which contract the pupils, while the sympathetic, which dilates the pupil, keeps it stimulated. The breathing is slowed, through the exhaustion of the nerve centers which act upon the muscles of the chest. The skin is made pale by the contraction of the blood-vessels, while at the same time there is a dilatation of the blood-vessels of the liver and other internal organs, the result of retro-stasis, in which there is an accumulation of blood in the internal organs. Notwithstanding the pallor of the skin, the stimulation of the sympathetic nerve is sometimes so great that the sweat

glands produce a forced secretion, which appears as cold sweat.

Recent laboratory studies have brought out a number of additional highly interesting facts in relation to the physical effects of worry. Through the labors of Brown-Sequard and numerous other physiologists, it has been demonstrated that the body produces a great number of internal secretions which are poured directly into the blood, instead of being discharged upon the surface of the skin or the mucous membrane. It is through the action of these subtle secretions that the intricate processes connected with nutrition are induced and regulated. It is probable that every cell in the body produces some subtle substance which acts upon and influences every other bodily cell in a specific manner.

These substances are of two classes, hormones and chalones. Hormones are substances which stimulate to activity, while chalones are substances which retard or control activity. Both classes of substances are necessary for balanced vital activity. The

organs which are most active in producing these internal secretions are the liver, pancreas, thyroid, thymus, kidneys, adrenals, spleen, pituitary body, ovaries and testicles.

The pancreas produces an internal secretion which, when combined with the ferment produced in the muscles, enables the muscles to convert sugar into mechanical energy. A disturbance of this function gives rise to diabetes. The adrenals are small glands connected with the kidneys, producing a substance called epinephrin, or adrenalin, which causes contraction of the blood-vessels, and raises the blood-pressure. This secretion appears to be essential to support the activity of the heart and blood-vessels. Its influence is so powerful that one physiologist was able to keep the heart of a dog beating actively, and the blood circulating through the animal's body for twenty-four hours after the animal's head had been removed.

The pituitary body is a small structure found in the brain, which produces a substance, *pituita,* which raises blood-pressure, and excites the action of the kidneys. The

thyroid gland produces a substance which causes dilatation of the blood-vessels. In health a nice balance is maintained between these various secretions. Worry disturbs the function of all the important organs of internal secretion. Worry has been known so to disturb the pancreas as to give rise to diabetes. Exophthalmic goiter, a disease associated with excessive activity of the thyroid, is believed to be produced in some cases by prolonged worry, which, through exciting the sympathetic nerve, overstimulates the thyroid. Stimulation of the pituitary body probably accounts for the profuse flow of urine which frequently accompanies worry. It has been proved that worry increases the secretion of adrenalin, the effect of which is to raise blood-pressure by overstimulating the heart and blood vessels.

It is important to remember that while worry causes vaso-constriction, it is equally possible that vaso-constriction may produce worry. Weariness may so predispose a person to worry that slight causes of anxiety be-

come a source of continual worry and mental distress. The business man often finds himself, when worn and tired with his day's labors, disposed to worry, while after a good night's rest the mental state is completely changed.

A practical fact which must not be forgotten is that while worry produces various morbid physical states, it is itself, in large part at least, a consequence of morbid conditions produced by other causes. A man who worries about his business may have real causes for anxiety. As long as his physical condition is sound, however, he does not worry, but faces his problems with courage and calmness, and when he has done his best to solve the problem or meet an emergency, calmly accepts the result. But let the same man under the same circumstances become the subject of chronic toxemia, through errors in diet or intestinal inactivity, or through the use of alcohol and tobacco, and the result may easily be the establishment of a predisposition to worry, on account of the production of the very same disturbances of

the pneumogastric and sympathetic nerves and the glands of internal secretion which are known to be a consequence of chronic worry, and thus the habit of worry may be induced, and worrying ultimately may become a fixed habit of the mind. This important fact must not be overlooked.

The writer, who has for many years been meeting thousands of subjects of worry of different sorts, has been led to divide the subjects of worry into three classes:

1. Those who worry because of the existence of real and natural causes of anxiety, such as great business responsibilities with threatened financial disaster, the prospect of the failure of cherished plans, etc.

2. Those who worry about trifles or even purely imaginary troubles, as the result of general vital depression and mental disturbance due to toxemia, such as frequently accompanies cases of chronic constipation, especially when associated with incompetency of the ileocecal valve, leading to the backing up of putrefactive material from the colon

into the small intestine, and the rapid absorption of toxic substances.

3. Persons who, having formed the habit of worry through either one of the above-mentioned causes, continue to worry, notwithstanding the fact that the original exciting causes have been removed.

The Cure for Worry

When we consider the possible remedies for worry, it must be recognized at once that all cases cannot be treated alike. The man who worries because of the threatened collapse of an important business enterprise, to the building up of which his whole life has been devoted, may not be relieved until the threatened danger is averted or the crisis passed. The man who is suffering from physical deterioration, because of chronic toxemia must be renovated physically. Poison habits must be abandoned. A natural anti-toxic dietary must be substituted for his customary poison-laden bill of fare. The bowels must, by natural means, be made to move three or four times a day, thus ridding the body of the influence of worry-producing

poisons. There must be a complete revolution in living habits, and a thoroughgoing adoption of simple-life principles of living. By this means a general physical regeneration may be produced, with the development of which the disposition to worry will gradually disappear as the cause is removed, until finally a normal happy mental state is established. The writer has seen this transformation in so many thousands of cases, without any attempt at mental or psychotherapeutics other than such encouragement as a physician naturally offers a despondent patient, that he feels fully convinced that in a large proportion, perhaps a great majority, of cases the disposition to worry is the result of physical causes, with the removal of which the worry disappears along with other morbid symptoms. In the great multitude of worry patients there is to be found, nevertheless, a certain number of individuals who worry only as the result of a pernicious habit, which may have been induced in the first place by an unusual press of business cares or some emergency, or

as the result of a temporary illness which has produced the physical conditions which have been above referred to as both the consequence and the cause of the worry habit. Such persons are good subjects for "Christian Science," the Emmanuel movement method, or any form of mental therapeutics. Suggestion is unquestionably helpful in cases of this sort. It is not necessary, however, that the suggestion should be employed in a formal or professional way. The natural suggestive effect of a change and wholesome environment appropriate to the individual's needs, operates as a far more potent remedy, and leads to more definite and permanent results than any form of professional suggestion.

Diversion is one of the most valuable remedies for worry. Concentration of the attention upon some wholesome subject is of utmost importance as a means of combating worry, whether due to present physical or mental causes or merely a residual habit. Constant occupation of some sort is essential as an aid to diversion. Manual work is

best. Gardening, boating, botanizing, bird study, nature study of any sort which takes one into the open, and such manual arts as basketry, weaving, pottery, mothercraft, sloyd, and carpentry, are highly useful occupations for a worrying invalid. The curative value of the simple "arts and crafts" is now so well recognized that occupation departments have been added to the equipment of many of the best institutions for the treatment of nervous invalids. Forty years ago the writer adopted this method with much success in dealing with neurasthenics. Chopping and sawing wood were found to be most excellent winter occupations for men. Acting under the writer's advice and encouragement, many a worrying student or bank president worked off his worry at the wood pile.

Professor Mikkelsen, of Copenhagen, general superintendent of sloyd in the public schools of Denmark, perfected many years ago a very complete system of wood sloyd especially adapted to the needs of invalids. Some years ago (1904) the management

of the Battle Creek Sanitarium induced Professor Mikkelsen to come to this country to introduce his excellent system, and to train a corps of teachers to carry on the work for the benefit of the guests of the Sanitarium. Most excellent results have been seen from the application of this healthful and diverting occupation. Weaving, basketry and other "occupations" are also found most helpful.

A most excellent diversion cure for worry is to be found in an effort to divert some other distracted neurasthenic from his corroding worries. An altruistic interest in the welfare of another sufferer is a most wholesome sort of diversion, especially as it may lead to a supreme effort of self-control.

The neurasthenic who worries must learn to divert his mind from morbid channels by an effort of his own will. Pain may be divested of its poignancy and danger, and even inevitable death shorn of its terror, by voluntary mental diversion. The *Titanic* sank beneath the waves with the passengers singing and the band playing.

Music, wholesome entertainments, pleasant games, golf, automobiling, agreeable conversation and a hundred other means of mental and physical diversion are all effective remedies for worry; but none are so valuable as what the patient can do for himself by voluntarily and resolutely turning his face away from his worries, and deliberately forcing his mind to give attention to other things. More than half the battle is won when the neurasthenic can be induced to devise and plan for his own diversion.

The most effective of all remedies for worry is to be found in religion. Christian faith is the greatest of all panaceas for mental maladies of this sort. True Christian faith leaves no room for pessimism nor for inane, fruitless worry.

The Bible abounds with antidotes for worry. Here are a few which have rendered incalculable help to thousands of worry-worn mortals:

"The Lord is my shepherd; I shall not want."

"He restoreth my soul."

"I will fear no evil: for thou art with me." Psalm 23.

"The Lord is the strength of my life; of whom shall I be afraid?"

"Let not your heart be troubled, neither let it be afraid."

"He forgiveth all thine iniquities; he healeth all thy diseases."

"Come unto me, all ye that labor and are heavy laden, and I will give you rest."

"In quietness and confidence shall be your strength."

"Thou hast put gladness in my heart . . . I will both lay me down in peace . . . for thou, Lord, . . .makest me dwell in safety." Psalm 4.

"The Lord also will be a refuge . . . in times of trouble." Psalm 9.

"He hears the young ravens when they cry."

"Wait on the Lord: be of good courage, and he shall strengthen thine heart." Psalm 27.

"I sought the Lord, and he heard me, and delivered me from all my fears." Psalm 34.

"Rest in the Lord, and wait patiently for him: fret not thyself." Psalm 37.

"Why art thou cast down, O my soul? and why art thou disquieted in me? Hope thou in God." Psalm 42.

If committed to memory and frequently repeated, these beautiful passages of scripture, full of hope and cheer, will become fixed in the subconsciousness, and will exercise a molding influence which, if encouraged, may serve as a potent remedy for the worry habit. Faith in God, the Creator of all things, as a real, active Presence, a Power which sustains one's life from moment to moment, keeping the heart beating, the lungs acting and all the processes of life in function, has a marvelous effect in keeping the mind calm and evenly poised. Belief and trust in the Source of all life and power, "in whom we live and move and have our being," must be a more effective means of casting out fear and worry or "fear thought" than any form of hypnotical suggestion, or any other subterfuge or substitute for Christian faith.

The Philosophy of Sleep

SLEEP, and the lack of sleep, are factors of so great importance in relation to neurasthenia that it seems well worth while to devote a short chapter to this very interesting function. Why do we sleep? and Why do we waken from sleep? are questions which have been long and earnestly discussed by physiologists and which even yet are not fully settled. Some facts are known, but the reasons therefor are not altogether clear.

A Russian observer noted that the blood-pressure falls twenty to fifty points during sleep. Mosso found from the study of a case in which a portion of the skull had been lost, and a study of monkeys in whose skulls a glass window had been arranged, that the brain diminishes in volume during sleep, while the volume of the rest of the body increases.

Fall of Blood-pressure during Sleep

The simple explanation is that the blood recedes from the brain during sleep. This

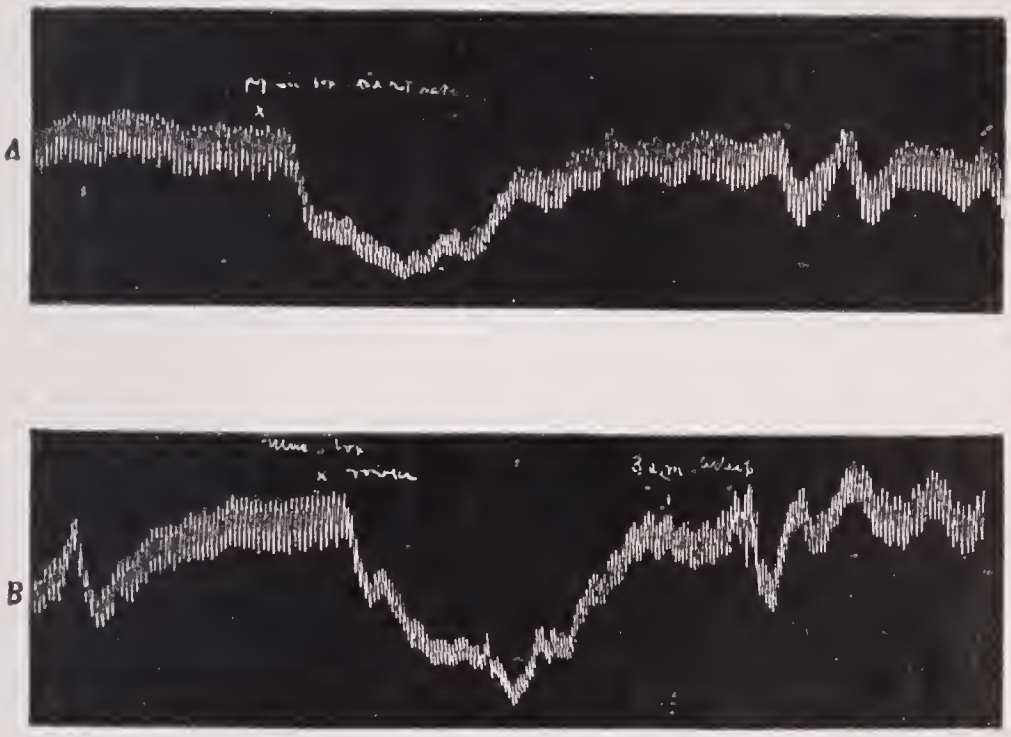
condition seems to be essential for perfect rest and for the repair of the exhausted brain cells. When the blood recedes, the nutritive lymph takes its place and thus supplies the cells with nutritive material, while diminishing the stimulating oxygen which is brought in contact with the cells through the blood.

Quiet Essential for Restful Sleep

One of the conditions essential for healthful, restful sleep is quiet. No doubt the constant din of the city, which never ceases day nor night, is a prolific source of neurasthenia. In sleep the ears are the last avenue to the mind which is closed, and it is doubtful whether the ears ever become wholly insensitive to external sounds even during the most profound sleep. The constant hammering of noise upon the sensitive brain cells day and night leaves no opportunity for complete rest, and the result is abnormal irritability and disease.

Experiments first made by Mosso, and since repeated by many physiologists, show that even during the most profound sleep the

circulation of blood in the brain is affected both by noises and by the dreams which are provoked by external sounds. By means of the plethysmograph, the effect of these influences may be easily studied. This device consists of two parts. (1) A chamber in which an arm or a foot is placed; (2) a recording device, by which the very slightest changes in the volume of the part are registered by a tracing upon a moving surface of smoked paper. The accompanying cuts, from Howell's excellent work on physiology, are reproductions of records obtained in this way from a person when asleep. The small pointed curves indicate the movements of the heart; the large downward curve in the tracing is the result of a noise made at *x* by setting a music box in operation. In the first of the two tracings the noise was not sufficiently loud to awaken the sleeper. In the second tracing he awoke, and, as will be noted, the curve is deeper. The drop in the tracing is due to the fact that when the brain was excited by sound, its blood-vessels dilated, diverting blood from the arm of the



CURVES SHOWING EFFECTS OF NOISES ON SLEEP

B, effect of external impression (music box), sufficient to awaken sleeper—a marked diminution in volume of the arm; B, effect of external impression (music box), insufficient to awaken sleeper; a str· ·ger diminution in volume followed by dilatation as the subjec. ain falls asleep.

sleeper, which thus became smaller. The smaller drops in the curve all indicate circulatory disturbances of similar origin.

The Theory of Sleep

Numerous theories have been proposed to account for the phenomenon of sleep. Bouchard believed sleep to be due to the accumulation in the body of a narcotic poison which, according to his view, increases during the waking hours and diminishes during sleep. The awaking he believed to be due to the development during sleep of a spasm-producing poison which causes muscular twitching and wakes the sleeper up.

Hypnotoxin

Piéron believes he has succeeded in separating from the blood a poison which he calls "hypnotoxin," which accumulates during waking hours. Dogs die when deprived of sleep for ten or twelve days, and according to this observer, with marked symptoms of poisoning.

Cajal, the discoverer of the neuron, ex-

plains sleep by the supposition that consciousness is due to the formation of contacts of the terminal filaments of the axons of cells in the front part of the brain with the dendrites of cells in the centers in which sensory impressions are stored. Unconsciousness is the result of a breaking of these contacts by contraction of the axons or dendrites. That is, consciousness exists when the circuits of the brain batteries are closed, just as the door bell rings when the electrical circuit is closed by pressing the button. But what force or influence presses the button? This nobody knows.

First Sleep the Most Profound and Refreshing

Czerny and other observers have pointed out the interesting fact that the most profound sleep occurs within the first two hours after retiring. The intensity of sleep was measured by the intensity of the sound required to awaken the sleeper.

The known facts of sleep seem to harmonize well enough with each of the theories proposed, and indeed with all of them, so

that each may be a part of the truth. It is clear enough that work—even the casual work of idleness, for the brain is never really idle—creates a necessity for sleep, a condition in which the output of energy is diminished so that the intake predominates and thus restores to the cell its store of energy, which has been dissipated during the waking and working hours.

The Brain—a Storage Battery Which Is Recharged during Sleep

Nothing could be more unwise than the attempt to cheat Nature of her opportunity for replenishing the body's energy supply. The granules of the cells are like the ammunition of the gunner. It is energy stuff, which under the influence of the will may be made to yield up its store of force in small explosions of ideas and impulses, which may be organized into plans, theories and actions. Primarily a man's working power depends upon his storage capacity for energy stuff, and the amount of available material in the store.

Damaging Effect of Work with Insufficient Sleep

Many persons have become neurasthenic through attempting to follow the custom of a Napoleon, a Wellington, an Edison, or some other great man reputed to have been able to work hard and continuously with an allowance of only four or five hours for sleep. It is probable that no human being has been able to work continuously for any considerable length of time on only four hours in the twenty-four. It is said that Napoleon spent only four hours in bed, but biographers tell us that he took frequent naps in the day time. Wellington has also been said to have been contented with four hours of sleep at night, but it is recorded by one of his biographers that he not infrequently fell asleep at the dinner table; and on one occasion his son, who was riding with him, discovered that he had fallen asleep while driving a spirited horse at a brisk pace down one of the principal streets of London.

Mr. Thomas A. Edison, one of the hard-

est working men of the present or any other time, and whose genius has developed more important inventions than can be credited to any other living man, is also reputed to require but four hours' sleep daily. This also is an error. The writer has been informed by persons who are well acquainted with Mr. Edison's habits that while the great inventor spends only four hours in bed, and sometimes does not undress for several days in succession, he nevertheless has a bed in his laboratory on which he drops down for a short nap whenever he feels inclined, which is often several times a day. An intimate friend of Mr. Edison said to the writer in answer to an inquiry upon this subject, "Mr. Edison sleeps as much as people usually do."

No one should imagine that a high degree of brain activity can be maintained continuously without giving the brain an opportunity for storing energy, which can only be done by the complete rest and repose to be secured by seven or eight hours of sleep. A very few persons may be able to get along fairly well with six hours, but eight hours of

complete rest in bed are required by the average person. Many persons who have a predisposition to neurasthenia require an hour or two more.

Sleeplessness

Sleeplessness is often one of the most persistent and distressing of all the various disorders to which the neurasthenic is subject. Every sleepless night aggravates the disease and intensifies every symptom. Drugs are not only useless as curative agents, but are often dangerous because they increase the neurasthenia, even when they induce sleep, and ultimately intensify the insomnia.

Fortunately there are simple but most effective means by which insomnia may be relieved. The most important of these is the neutral bath. This consists of a full bath at a temperature of 92° to 96° F. A bath of this temperature has wonderful calmative and soporific effects. The duration of the bath may be as long as necessary to produce the desired effects. Several hours in the bath may be required. Sooner or later the disposition to sleep will come, and then the pa-

tient may leave the bath and retire. In getting out of the bath the greatest care must be taken to avoid chilling, even in the slightest degree. The patient should not be cooled off in the manner usual after warm baths, but should be wrapped in a Turkish sheet and gently dried (not rubbed), and should then slip into a warm bed as quietly as possible.

The wet-girdle is another remedy which proves quite efficient in a very large number of cases. This measure consists of a moist towel wrung quite dry out of cold water, then applied about the trunk and covered with a dry flannel and mackintosh, or oiled muslin. Care must be taken that the edges of the moist towel are not exposed, as the evaporation thus induced will cause chilling and so destroy the good effect of the application. This bandage may be worn every night for months if necessary, but a fresh towel must be used every day to avoid infection of the skin.

The wet-sheet pack is another simple sleep producer of great power. It has the advantage that it may be used when a full bath is

not available, and as the patient goes to sleep in the pack he may be allowed to sleep undisturbed for several hours, or even the whole night. The wet-sheet pack is more difficult of application and requires the services of a nurse well trained and experienced in hydriatic methods.

Gentle exercise in the fresh air in one's bedroom, just before retiring, conduces to sleep by diverting an excess of blood from the brain to the muscles. Massage, especially directed to the feet and legs, acts in the same way as a derivative of blood from the head. A hot bag to the feet when they are cold, and a cold bag when the feet are hot, are other useful measures.

Sleeping in the open air is not only conducive to sleep, but secures other advantages which are of great service to the neurasthenic, increasing nerve tone, appetite, and improving digestion and general vital resistance.

A Simple Device for Inducing Sleep

A simple device which sometimes aids in inducing sleep is the following: On going to

bed take along a card and a short bit of pencil. After taking care to compose the body and mind in as comfortable a state as possible, begin taking regular and deep breaths, putting down a mark on the card for each breath. The number of marks on the card in the morning will serve as a record of the time required for getting to sleep. This simple means serves to divert the mind from harassing subjects and induces a monotonous mental state which is favorable to sleep.

The Noise Nuisance

That noise may be a cause of disease is no longer questioned by pathologists. Certain persons get used to noises, no matter of what sort, when long exposed to them, and seem to suffer no injury; but even these persons are being damaged more or less by the constant hammering upon their nerve centers through the auditory nerves. Nerve centers need rest quite as much as do muscles. Without the complete rest which is essential for quiet repose, the strongest nervous system will ultimately break down with nervous ex-

haustion or with some more specific nerve disorder.

Many persons are born with sensitive nerves. The neurotic type is rapidly increasing, both as the result of our perverted civilization and as the result of heredity, Nature's inexorable bookkeeper, which puts down every infraction of the laws of physical rectitude, and takes care that every seed of disease thus planted bears its legitimate crop in the children of the wrong-doer, as well as in his own experience.

These hyper-sensitive people are great sufferers from the varied noises which make up the hum and roar of city life. Even sleep does not deliver them from the wear and tear of the discordant acoustic waves that are continually pounding their ear drums. When we sleep, we close our eyes and thus shut out the light, with its irritating actinic and luminous vibrations; but we cannot close our ears in similar fashion. They remain open during sleep, and sound impressions continue to pour into the brain precisely as during our waking hours. This is

doubtless a wise arrangement by which Nature provides that the body shall not altogether be cut off from communication with the external world, even during sleep.

Sound, restful sleep in the presence of noise is thus impossible. A person who lives in the midst of noise gets no really complete rest day or night; asleep or awake, the nerve centers are constantly receiving a torrent of irritating impulses. This incessant nerve nagging gives no opportunity for recuperative rest.

The Public Too Forbearing

The public has been quite too tolerant and long-suffering in this matter. Not infrequently noisy factories are permitted to locate in the center of populous sections. Locomotives and factories are allowed to blow powerful whistles and sirens that in some cases make the windows rattle a mile away. Street car lines are permitted to run worn-out cars with flat wheels which pound the rails like gigantic trip-hammers. A host of unnecessary and nerve-racking noises are permitted which might easily be suppressed

by the concerted action of intelligent citizens.

Writes one of the leading nerve specialists of St. Louis, who is fighting the nuisance in that beer- and noise-ridden city: "The unnecessary noises of modern times are turning the nation into a multitude of sleep neurasthenics. The worst noises of the day are the automobile horns, the street cars, and the screeching of factory whistles. Who can defend the chorus of whistles that the manufacturing establishments turn loose morning, noon, and night? Then there are the church bells; they have outlived their usefulness. People nowadays do not need to be called to worship by a thundering peal from half a dozen bells, for certainly every one can afford a dollar watch. The shrill screech of the peanut vender's wagon also ought to be suppressed."

Noise Making a Neurotic Habit

One of our popular magazines, in a very intelligent discussion of the question of noise, says: "Noise is fast becoming a neurotic habit of the American people. Inevitably, as an organism takes the impress of

its environment, a persistent atmosphere of confusion sooner or later forms a permanent background of consciousness. The nervous system, constantly compelled to combat with noise, acquires a habitual alertness, and an abnormal irritability keeps it forever occupied. Actual quiet produces a functional vacuum. Tension, incompatible with real rest, marks even the hours of customary repose.

"Locomotives shriek in town and country by night and by day. Beautiful suburbs in our Western cities suffer nightly from the incessant signals of engines on adjacent freight tracks. A great university has its campus doubly crossed by railway lines, and hourly its lecturers pause, unable to compete with the noise-drowning steam-blasts of the locomotives as they approach the viaducts. Trolley-cars replace the steam whistle with the compressed air 'screamer.'

"Electric and cable cars, upon surface or elevated lines, contribute a large share to the general and miscellaneous volume of a city's noise. The grind of flanges upon unlubri-

cated curves; the unnecessary back-lash of worn gearing upon down-grades; the rattle of cable and clutch and brake; the roar and jar of rushing speed—all testify to the fact that science has not yet secured the means of reducing locomotive noise.

"Steamers, tug-boats, and electric launches, practise a well-nigh fiendish ingenuity in their varied achievement of toot and whistle as they ply the lakes and rivers, while occasionally some sportive captain equips his craft with a steam siren by way of making extra noise.

"In many towns and cities of America operatives are called to work, to eat, and—strange paradox—to rest, by a concert of blasts from the throats of scores or hundreds of factory whistles. Frequently, the factory clocks vary by minutes, when the concert of noise is broken and becomes a succession of prolonged and painful shrieks. It is still the custom in many places to put steam-whistles into service as a fire-alarm.

"Wagons, laden with structural materials, add to the babel of cities the jar of their

carelessly loaded burdens. Automobiles course the city streets and country roads with every variety of discordant signal.

"Street peddlers vie with one another in the noisy advertisement of their wares. Newsboys re-echo the sensational features of the press in tones as exaggerated as many of the journals they vend. Enthusiasm, in any and every cause, vents itself in catcalls, horns and piercing whistles.

"That noise has never been defined as a public nuisance under the common law or the sanitary code is strange, for it is easy to prove its injury to human health. In common with all stimulants, its withdrawal makes its pathological influence physiologically clear.

When the Stillness Hurts

"Now and again, when the vast volume of a city's roar is broken by some musical sound, the sense of auditory relief is testimony to the nerve tension which the hearer habitually and unconsciously suffers. Even in the comparative calm of a city's night, this

nerve tension enters into sleep, and mars the relaxation upon which rest depends.

"When the neurasthenic undertakes the rest-cure, the overwrought and exhausted nervous system at first rebels against the enforced quietude. It has been strung to noise. So integral a part of the consciousness becomes the appreciation of habitual sound that actual silence brings a painful sense of vacuum, to which the nervous mechanism finds it difficult to adjust itself. A young lad, whose life had been spent in the ceaseless uproar of a great city, cried out upon his first introduction to the countryside, 'Oh! it is too much! The stillness hurts!'

"The mischievous consequences of irritative stimuli are not by any means confined to the specific sensations that they evoke. Against these prejudicial influences, the nervous system wears an invisible armor, which the physiologist calls the quality of resistance. Multitudinous stimuli act upon the peripheral sense organs of hearing, of sight, of touch, etc., to which the nerve centers are refractory. They may excite impressions,

which flood the avenues of special sense, but against these, whenever they are ineffective (subminimal), whenever they are too intensive (hyper-maximal), or whenever they are markedly arhythmical, this wall of resistance in the nerve-centers is raised

"That not only the response but the resistance of nerve-cells means the expenditure of energy is shown by the fact that when nerve-cells suffer partial exhaustion, their resistance is readily overcome; they prove too easily responsive. Slight stimuli provoke in them marked reaction; strong stimuli, riotous results. In early and in late life this instability of the nervous mechanism is frequently exhibited. The aged start at slight and unexpected noises. An infant of four months, startled by the explosion of a cannon cracker, has been known to pass into convulsions.

"The nervous system is prejudiced by the forced recognition of unpleasant impressions induced by marked noises; but it is also continually taxed to maintain a barrier of protection against the conscious effects of a

great volume of minor noise stimuli or to interpose muffling or dampering agencies between the nerve-centers and their excessive and offensive stimulation in this auditory field.

Education of the Public Needed

"A careful review of the principal sources of noise nuisance suggests that education, leading up to public legislation on the one hand, and to personal control on the other, is requisite for relief.

"The general adoption of the block system, with automatic semaphores and crossing-guards, would do away with virtually all locomotive signals on steam and trolley roads. Muffling or sound-deadening devices of various sorts are available for application to both locomotive and stationary engines. So far as safety demands the retention of sound-signals on boats and motor-cars, a certain musical quality in these may be secured. The tremolo, in use upon some automobiles, is proof of the possibility.

"Preference should be given to those forms of street paving which combine dur-

ability and sound-muffling qualities. Manhole covers may be made to fit firmly. Wagons, loaded with structural materials uncushioned to prevent jar, should be forbidden to travel upon the public streets. Rubber tires, already in general use, should invariably be employed. Whistling in street cars should be forbidden.

"Vendors should be required to present their wares in inoffensive quiet. Public and private celebrations which partake of the nature of riot should be forbidden by law. The use of firearms and fireworks should be generally suppressed in the interest, not only of life and limb, but of nerve-poise."

Local and national associations are needed to organize and carry on a campaign against noise. A New York City society has already accomplished much in this direction. The matter has been taken up with considerable success in other cities.

The noise nuisance is an evil which can be suppressed. It is only necessary to awaken a general sentiment against this great public wrong.

There is another phase of the noise question, which must not be overlooked. Part, at least, of the injury we suffer from noise is due to the undue attention given it. A neurasthenic may ride a week on a thundering train without experiencing the slightest inconvenience from the incessant noise, but, arrived at his home, he is made miserable by the rattling of a cart, the thrumming of a neighbor's piano, the chirping of a cricket, or the prattle of little children on the street. The mind may be trained to ignore and cease to hear those incessant noises which are necessarily incident to civilized life, and from which we cannot altogether escape.

This is well illustrated by the following interesting account by Dr. Paul Dubois, of Berne, of the cure of a noise-distracted neurasthenic:

"M. X. was a neurasthenic, forty years of age, who had always been easily fatigued, and whose moods were slightly hypochondriacal. He suffered from dyspepsia, and often from insomnia, but what annoyed him most was his sensitiveness to noise. The noises

of the street irritated his nerves and gave him headache. Finding no indications for Weir Mitchell's treatment, I established the patient in a boarding-house. Scarcely had he come there than he began tc complain. There was a coppersmith in the neighborhood, who every day hammered his brasses; the patient counted the blows of the workman, and when the last had stopped, he would say to himself: 'It is going to begin again.' There were a great many carts which passed, and which ground on the gravel on the road. That was unbearable. At night there were dogs which barked at the moon, and neighbors who came home late.

"It was with an accent of reproach that he told me his annoyances, for he had warned me by letter, several weeks in advance, that he must have a quiet room.

" 'Monsieur,' I said to him, 'I have no other room at your disposal, and if you will take my advice it will be better to stay here. Even if I had a quieter room, I should hesitate to give it to you.'

" 'Ah, really, it is not very amiable of you to say that.'

" 'Pardon me, you misunderstand the meaning of my words. You want, do you not, to get rid of this sensitiveness to noise, which has tormented you for so many years? If I should put you in a chamber of luxurious silence you would suffer less, but when I let you come out you would be still more sensitive; you know that when we have been in the dark the light of a candle dazzles us. You will never get over this infirmity by cultivating your hyperesthesia. I most certainly do not want to exaggerate things, and I have no intention of placing you under particularly difficult conditions, as in a noisy home. But the retreat which I offer you is as tranquil as the average. You will find noises everywhere resulting from the activity of your fellows. You do not, however, want to live the life of a hermit; your profession requires a sojourn in town. What will become of you if you do not know how to bring back your sensibility to the normal conditions?'

" 'But it is stronger than I. My auditory nerves are endowed with a diseased sensibility.'

" 'You are wrong. Your auditory acuteness is normal. It is not your ears which are too sensitive; it is your mind. The noise tires you only because you have the conviction that you cannot stand it. Just believe me, no one hears anything but that for which he listens (you have told me that you count the workman's blows); no one sees anything except what he looks at; no one has any sensations except those to which he pays attention. Undoubtedly, if the noise is too loud, and the light too blinding, our attention is immediately fixed, and I will not ask you not to tremble if a bomb bursts beside you. But the noises of life are inevitable, and we must know how to pay no attention to them. What neurasthenics lack is the power of adaptation. Say then: I will pay no more attention to these noises; they do not exceed what is possible to bear.'

"At the end of three days my patient had suppressed his hyperesthesia."

How a Neurasthenic Should Live

In this chapter will be presented an outline of the general course of life to be followed by all neurasthenics, and by those who have a hereditary predisposition to neurasthenia, although the characteristic features of the disease may not as yet have made their appearance.

Children of neurasthenic or neurotic parents may, by the adoption of the mode of life herein outlined, escape the miseries endured by their parents, and develop and maintain a degree of efficiency and endurance equal to that of the average normal person.

A neurasthenic who desires deliverance from the wretchedness and inefficiency entailed by this malady must first of all resolve to obtain recovery, whatever cost of effort or self-denial may be involved. Every harmful indulgence, every extravagant waste of energy, must be abandoned. Health culture must be entered upon with all the ear-

nestness and enthusiasm and thoroughness essential to success in any business enterprise. The recovery of health and the building up of physical and mental endurance and efficiency must not be regarded or treated as a secondary matter, but must be made, for the time being, at least, the object of concentrated and undivided effort.

Since neurasthenia, with other degenerative disorders, is primarily a result of departure from natural or physiologic modes of life, the thing of first importance is an intelligent and thoroughgoing return to Nature. In other words, *a neurasthenic must live the simple life.* What this involves may be learned by a careful study of the following rules, which were formulated by the writer some years ago and published under the title, "The Simple Life in a Nutshell," here somewhat expanded by introduction of a number of explanatory paragraphs.

How to Live the Simple Life

It is not possible to embody in a few simple rules all the instruction necessary to

enable a person to lead a well-ordered and physiologic life. It is possible, however, to formulate a few simple statements, the more important principles of conduct which experience has shown to be most in harmony with the requirements of biology and human physiology.

The fundamental idea of the simple life is based upon the fact that man, like all other animals, is subject to certain great biologic laws which rule his existence in the same inexorable way that gravitation acts upon the planets and the stars. The biologic laws which relate to man's well-being as a mammal and as a member of the family of primates cannot be ignored with any degree of safety any more than the airman can ignore the laws of aeronautics, or the sailor the principles of navigation. In law we live, move, and have our being; when by attempting to ignore the laws which especially relate to animal organisms of wild species and type we become outlaws, the same great principles of vital activity which support or maintain our lives become de-

structive agencies through which we become a prey to disease and premature decay.

The following rules are not a compilation, but rather a crystallized expression of the results of the study of the physical habits of many thousands of men and women. The writer has enjoyed a somewhat extensive opportunity to study this subject, and has undertaken to present a summary of his observations in a series of rules which constitute his own health code.

General Rules for Healthful Living

1. Give attention daily to cultivating health. It will pay. Study the conditions and the surroundings of the home and the business, and give careful thought to personal habits and practices, with special reference to their bearing on health.

2. Recognizing that health of mind and body is one of the most valuable of all personal assets, make every reasonable effort to maintain intact, and, if possible, increase the capital of physical and mental strength.

3. Give to the body and its functions that

care and study which you would accord to any other valuable and costly mechanism.

Eating for Health and Efficiency

4. Eat only natural foods; that is, those which are naturally adapted to the human constitution. The natural dietary includes fruits, nuts, cooked grains, legumes and vegetables, perhaps milk and eggs in moderation and also butter. Natural food imparts to the body the greatest amount of energy, and maintains normal conditions of life. No animals except scavengers and men eat everything. We should follow our nearest relatives, the orang-utan and chimpanzee, in diet.

5. Avoid meats of all sorts (flesh, fowl, fish, including "sea food"). These are unnatural foods. They are all likely to contain deadly parasites of various kinds, and always contain countless numbers of noxious germs, "meat bacteria" or "wild germs," which infest the intestines, cause putrefaction and other poison-forming processes, and inoculate the body with colitis and many other diseases. These germs are not de-

stroyed by ordinary cooking, such as stewing, broiling, frying and roasting.

The following table shows the number of germs found in different meats obtained fresh from the market:

Specimen	Putrefactive Bacteria Per Ounce	
	When Purchased	After 20 hrs. at room temp.
No. 1 Large sausage	12,600,000,000	14,700,000,000
" 2 Small sausage	19,890,000,000	19,212,000,000
" 3 Round steak	16,800,000,000	25,200,000,000
" 4 Roast beef	16,800,000,000	22,500,000,000
" 5 Smoked ham	1,293,600,000	22,500,000,000
" 6 Hamburger steak	3,870,000,000	21,000,000,000
" 7 Pork	3,781,200,000	31,080,000,000
" 8 Porterhouse steak	900,000,000	21,000,000,000
" 9 Sirloin steak	11,340,000,000	
" 10 Tenderloin (well done)	756,000,000	
" 11 Tenderloin (rare) ...	5,040,000,000	

6. Take care to avoid an excess of protein; that is, the albuminous element, which is represented by lean meat, the white of eggs and the curd of milk. An excess of protein promotes putrefaction, and thus intestinal autointoxication, the chief cause of "biliousness," colitis, appendicitis, gall-stones, arteriosclerosis, possibly cancer, Bright's disease and premature old age. Ordinary

bread contains a sufficient amount of protein, as do also most other cereals. Most nuts, also peas and beans, contain an excess of protein, and should be eaten sparingly.

A growing infant is daily supplied, in the mother's milk, which constitutes its natural food, with one calory of protein for each pound of its body weight. Since an infant is building up its bodily tissues, it must require a larger proportion of protein than is really necessary for an adult; hence it may safely be said that one calory of protein per pound of body weight is amply sufficient to supply all the actual needs of the body.

This amount of protein may be represented, in a person weighing 120 pounds, to be one ounce of dried protein. Such a quantity of protein is furnished by any of the following: 28 ounces of milk; 8 eggs; 3 ounces of pine nuts; 4 ounces of dried peas; 8 ounces of wheat meal; 37 ounces of potato; 4 ounces of almonds.

7. Eggs should be eaten in great moderation, if at all. They encourage autointoxication, and thus often cause "bilious-

ness." The yolk of the egg is more wholesome than the white.

8. Cow's milk is not altogether suited for human food. A large proportion of invalids —nearly half, perhaps—suffer from "casein dyspepsia," and cannot take milk without suffering from constipation, headache, "biliousness," coated tongue, or other unpleasant symptoms which indicate intestinal autointoxication. Such persons may sometimes make use of fresh buttermilk, sour milk, cottage cheese, yogurt cheese or yogurt milk, with less difficulty, and even with benefit. Excellent substitutes for milk may be prepared from nuts (almond cream, malted nuts).

9. Animal fats, such as lard, suet and ordinary butter, should be avoided. They are difficult of digestion, and promote intestinal autointoxication, and thus cause "biliousness." To be wholesome, butter must be perfectly sweet, and should be made from sterilized cream.

Persons who are not subject to casein dyspepsia are often able to digest sterilized

cream more easily than butter. Persons who suffer from hyperpepsia—"sour stomach"—may take sterilized butter and cream more freely than those who suffer from slow digestion. When butter and cream produce pimples on the face, a coated tongue, or a bad taste in the mouth, they must be diminished in quantity, or omitted altogether.

10. Vegetable fats are more easily digestible, and do not encourage intestinal autointoxication.

Nuts, malted nuts, ripe olives and olive oil are excellent substitutes for butter and cream.

11. Chlorid of sodium, or common salt, should be used sparingly. According to Richet and others, the food naturally contains all the chlorid of sodium actually required by the body, so that the addition of salt to the food is necessary only to please an acquired taste. A safe rule, *The less the better.* Persons who have dropsy, Bright's disease, arteriosclerosis, gastric ulcer, hyperacidity, as well as obese persons and epileptics, should discard salt.

12. Food combinations should be such as to give the proper proportion of the several elements—proteins, carbohydrates and fats. Fruits and vegetables, as well as other combinations of natural foodstuffs, agree perfectly when mastication is sufficiently thorough to reduce the food to a liquid state in the mouth.

13. The quantity of food should be adapted to the size of the person and the amount of work which he does. Never eat to satiety. A moderately active person of average height requires 200 calories of protein (1/10), 600 calories of fat (3/10) and 1,200 calories, of carbohydrates (6/10), or a total of 2,000 calories, or food units, daily. This is furnished by the following: Bread, 10½ ozs.; milk, 6 ozs.; potatoes, 8 ozs.; butter, 2¼ ozs.; rice flakes, 1¼ ozs.; cream, 2¼ ozs.; apples, 7 ozs. The proper quantities for any bill of fare may be easily calculated by aid of the "Battle Creek Sanitarium Diet List." (Published by the Good Health Publishing Co., Battle Creek, Mich. Price 25 cents, post-

paid.) Be careful to eat enough to maintain normal weight (see table in the "Diet List"). The body can dispose of a small excess, but cannot make up deficiency.

14. Weigh once a month. To reduce weight, eat less and exercise more. To gain in flesh, eat more starchy foods and butter, oil or nuts. Eat one-third more when doing hard muscular work. Mental work requires no more food than loafing.

15. Eat when hungry, never because it is mealtime, or because invited to eat. Food must be well relished to be well digested. According to Pawlow, "appetite juice," which is produced by stimulation of the nerves of taste by palatable food, is the most important factor in gastric digestion.

16. Cane-sugar should be eaten only in small quantity. Large quantities cause acidity and give rise to gastric catarrh and indigestion. Sweet fruits, such as raisins and figs, and malt sugar, are natural and wholesome sweets and may be eaten freely. Honey is wholesome, but does not agree with all persons.

17. A sedentary life tends to produce intestinal inactivity; that is, slow digestion and constipation; hence, the ordinary daily bill of fare should supply an adequate amount of laxative foodstuffs, fresh sweet fruits (not preserves), especially figs and prunes, acid fruits and fruit juices, fresh vegetables, whole-grain preparations and especially wheat in some form.

18. Some fresh, uncooked food should be eaten at each meal in the form of fresh fruits or fruit juices, lettuce, raw cabbage, cucumber and other salads.

19. Fresh vegetables and whole-grain cereals are needed to supply lime, potash and other salts. The blood and all living cells require these salts, as do the teeth and the bones. The free use of cane-sugar and meats leads to lime starvation, because of the deficiency in lime. Avoid white bread. Eat baked potatoes freely, and greens of all sorts.

Recent experiments by Hindhede and others have shown that the potato is one of the most useful of all our vegetables, and

that it may advantageously replace bread and other cereals to a very large extent. Cereals contain excessive acids. Persons who have a tendency to rheumatism, Bright's disease, skin affections, and especially neurasthenics should make the potato a staple article of diet. The diet of such persons should consist chiefly of fruits and vegetables. Use bran every meal, other cereals sparingly.

20. Avoid complicated dishes and great variety at one meal, but vary the diet from day to day, as the appetite may indicate.

Regularity of Meal Hours

21. Eat at regular hours, so as to maintain the normal intestinal rhythm which secures the daily movements of the bowels. Rather than omit a meal entirely, eat some fruit or a cake of colax (agar-agar) with fruit juice, or some other simple nutrient which will keep up the peristaltic procession and rhythm.

Taking food into the stomach when food is already present is about the worst insult that can be offered to this greatly

abused organ. The absence of appetite may be ordinarily regarded as an indication that the stomach still retains some portions of the previous meal.

Hunger, as shown by Cannon, is due to the contraction of the empty stomach upon itself; hence, hunger is not ordinarily experienced so long as food is present in the stomach.

22. The best meal plan is to eat twice a day. Eight to nine A. M. and three to four P. M. are the best hours; or eleven A. M. and six P. M., if the retiring hour is necessarily very late. When breakfast is omitted or taken very late, it is an excellent plan to take some fruit soon after rising.

23. If three meals are eaten, the heartiest meal should be taken at midday. The breakfast should be substantial, the evening meal very light, especially avoiding pastry, fats, rich sauces and hearty foods. The evening meal should consist chiefly of ripe or cooked fruits, liquid foods and such cereals as boiled rice or cereal flakes.

24. Avoid iced foods and drinks. Very

cold foods or drinks should never be taken freely, and must always be swallowed so slowly and in such small quantities that they will be warmed before reaching the stomach.

25. Chew every morsel until free from coarse particles. Thorough chewing develops "appetite juice" in the stomach and thus combats intestinal autointoxication, a most prolific cause of disease. Careful mastication affords opportunity for the nutritive instincts to select the food and food elements adapted to the body needs, and to say, "Enough," at the proper moment. Hence, give preference to dry foods. Sip liquid foods slowly, taking care to insalivate thoroughly.

26. Dismiss work, worries, business cares and annoyances while eating. Good cheer promotes good digestion. Anger, worry, irritation, stop digestion.

27. What we eat today will be walking about and talking tomorrow; hence all foods not known to be pure and wholesome should be avoided. Especially avoid rich and so-

called hearty (hard to digest) foods, and such indigestibles as pickles, green olives and preserves.

28. Take three or four pints of water a day, including liquid food.

Do not drink much at, nor immediately after, meals. Take a few sips whenever thirsty.

Drink a glassful of water on rising in the morning, on retiring at night, an hour before each meal, and two or three hours after eating.

Exercise for Health

29. Live as much as possible in the open air. If compelled to work indoors, be sure that the living and work rooms have an ample, continual supply of fresh air. The lower the temperature the better, so long as the body is kept comfortably warm. Temperatures above 70° F. are depressing. The breathing of cold air is a continuous tonic.

30. Working in the open air is one of the best forms of exercise, especially working in the garden, digging, hoeing, pruning, etc. Do some good, hard muscular work every day, enough to produce slight muscular

fatigue and free perspiration; but avoid exhaustion. Exercise out of doors is most beneficial and swimming in water at 76° to 78° F. is the best of all special health exercises. Rapid walking and hill climbing are excellent; stair climbing is good.

31. One need not degenerate physically because his occupation is sedentary. Always sit erect, with chest held high and the small of the back supported. Sit as little as possible. Standing and lying are more natural and healthful positions than sitting. One may exercise while sitting at work by deep breathing and by stiffening the muscles of first one limb a few seconds, then the other. All the muscles in the body may be thus exercised.

32. Deep breathing aids digestion, encourages liver and bowel action, develops the lungs and purifies the blood. The only directions needed are: Hold the chest high and breathe as deeply as you can ten or twenty times every hour, or oftener. The best "breath" gymnastics are swimming, hill

or stair climbing, and rapid walking or running. Always breathe through the nose.

33. In walking, always hold the chest high and carry it well to the front. Swing the arms moderately, and walk fast enough to hasten the breathing a little. Nine miles of walking a day at the rate of three miles an hour is the necessary amount for adults. Most housekeepers and laborers do more.

34. Develop the abdominal muscles by some simple exercises, such as walking on tip-toe, with chest held high, or running round the room on all fours; or lie on the back, hold the legs straight and raise them to the perpendicular, repeating thirty to forty times three times a day.

Lying on the back, raise the body from the lying to the sitting position, with the hands placed upon the back of the neck. Repeat ten to twenty times three times a day, gradually increasing the number.

35. If the abdominal muscles are weakened, and the lower abdomen sags, an abdominal supporter should be worn when on the feet, until the muscles have been strengthened.

The Toilet

36. Cleanse the mouth and teeth thoroughly before and after each meal, on rising and on retiring. A foul tongue and decaying teeth indicate mouth infection, intestinal autointoxication, and general low resistance.

37. Bathe daily at night in warm weather. Twice a week in winter, take a warm cleansing bath before retiring. Apply fine vaseline or lanolin cream (see page 97) after the bath if the skin is dry.

38. Take a short cold bath every morning on rising. This is an excellent tonic. Or take a cool air bath morning and night, rubbing the skin with a dry towel.

If the skin is irritated, apply Doctor Bulkley's skin cream. (See page 97.)

39. The hands, nose and scalp also require sanitary attention.

Rub the scalp with the finger tips dipped in cold water twice a day. For the hands, use a good soap and rinse well with soft water. If rough, apply skin cream (see page 97).

40. *The bowels should move thoroughly*

three times a day, most naturally soon after each meal. Many persons move the bowels soon after rising. Train the bowels by trying to move them on rising and after meals.

Most people whose bowels move only once daily are suffering from intestinal autointoxication. The bowel movements are belated, being constantly two or three days in arrears.

Food is the natural laxative, hence constipation must be chiefly combated by regulation of the diet. The food may be assisted by use of agar-agar (Japanese isinglass), and by the use of sterilized bran. Lubrication of the intestinal tract is also very advantageous; this may be accomplished by the use of specially purified white Russian paraffin oil.

The public should be warned that some paraffin oils are not safe. Only white Russian oil should be used, and, according to Ross, this must be specially purified to free it from certain harmful elements.

The most laxative foods are those containing the largest amount of cellulose. Acid

foods are also to some degree laxative. The following table shows the amounts of cellulose found in different foodstuffs:

CELLULOSE CONTENT OF COMMON FOODSTUFFS

VEGETABLES	No. of grains of cellulose in one ounce
Asparagus	5.2
Beans	4
Beets	5.25
Brussels Sprouts	7.85
Cabbage	9.2
Carrot (raw)	4.9
Cauliflower (steamed)	4.55
Celery (raw)	7
Cucumber (raw)	3.9
Green Peas	9.35
Kohlrabi (raw)	7.75
Lettuce	3.65
Onion	3.55
Parsnips	8.65
Peas (dried)	28.5
Potato (baked)	5.45
Pumpkin	6.1
Spinach	4.65
Tomatoes	4.20
Turnip	6.6

FRUITS	Per cent Cellulose	No. of grains of cellulose in one ounce
Prunes (cooked)	2	10
Apples	1	5
Pears	3	15
Peaches	1	5
Plums	1.5	7.5
Cherries	2	10
Raspberries, red	7.4	37
Strawberries	2	10

Fruits	Per cent Cellulose	No. of grains of cellulose in one ounce
Currants	4.6	23
Huckleberries	12.2	61
Blackberries	5	25
Grapes	1.5	7.5
Raisins	1.7	7.5
Raisins (stewed)	1.7	7.4
Oranges	2	10
Bananas	.3	1.5
Figs	4.5	22.5
Apricots	2.5	12.5
Gooseberries (stewed)	3.5	17.5
Cranberries	5	25
Cereals		
Wheat (cooked)	2	10
Wheat Grits (cooked)	1	8
Rolled Wheat (cracked)	2	9
Fine Flour	0.3	1.5
Graham Flour	2	10
Oatmeal (cooked)	10	44
Barley (cooked)	4	20
Polished Rice	0.4	2
Unpolished Rice	0.75	3.75
Rye (small)	3	15
Corn Meal	2	10
Corn Flakes	2	10
Beans (dried)	8	40
Peas (dried)	5.7	28.5
Lentils	4	20
Sterilized Bran	40	200
Graham Bread	1.2	6
Whole Wheat Bread	1	5

In some cases of obstinate constipation it is necessary to train the bowels to normal activity by introducing into the colon, within an hour after breakfast, one or two pints of water at 80° F. Hot water relaxes the bowel,

but cold water improves the tone of the intestinal muscles and aids in restoring normal sensibility, which is often lost in cases of chronic constipation.

Suggestions

For inactive bowels, knead the abdomen well with the hands night and morning, especially the lower side parts. Eat laxative foods, especially fruits, coarse vegetables, whole-grain cereals and bran, at each meal. Eat an orange or an apple on rising and retiring. Exercise the abdominal muscles. Visit the closet regularly after each meal to train the bowels. When a "call" is experienced, respond immediately. Five minutes may postpone action indefinitely. Support the feet on a stool before the closet seat.

Putrid, foul-smelling stools are an indication of intestinal autointoxication, and are due to an excess of protein in the form of meat or eggs, or to decay from stasis or stagnation in some part of the colon. Such a condition always breeds disease and indicates need for a change of flora.

The Neurasthenic Needs Much Sleep and Rest

41. Sleep eight hours each night. If not strong, take a nap before dinner. Growth, assimilation, and repair, are most active during sleep.

42. Surroundings at night should be quiet. Sleep amid noise is not normally refreshing. On the side is the best position during sleep for most persons. Change sides.

43. The bed should be neither too hard nor too soft. Avoid feathers. The covers should be dry, warm, light and porous. Avoid overheating by excess of clothing. Use a thin pillow and discard bolsters.

44. Make the weekly Sabbath a day of complete rest from work. Spend most of the day out of doors if possible. Take a half day off for an outing in the middle of the week.

Clothing

45. The clothing should be loose, comfortable, light and porous. Restrictive clothing is necessarily damaging, for the trunk of the body is continually changing in form and

size. Wear porous underclothing next to the skin. Cotton is best, linen next best.

46. Avoid waterproofs, except for temporary protection. Clothe the extremities so as to keep them warm and dry. Avoid too much clothing.

Mental Hygiene

47. Don't worry. Cheer up! Worry wears worse than work; worry destroys, work produces; worry wastes energy, work utilizes it; worry subtracts, work multiplies; worry dwarfs, depresses, confuses, kills; worry stops digestion, paralyzes the bowels, slows the heart; worry is known to cause diabetes, goitre, neurasthenia and gout; worry anticipates failure and creates disaster. Worry is a mind malady—a mental unsoundness. (See page 183.)

48. Do not become self-centered. Avoid thinking or talking about ailments or other unpleasant things. Cultivate altruistic ideals and wholesome and optimistic thoughts.

49. Exercise self-control and restraint in

all things. Work uses energy moderately; the passions and the emotions, enormously.

50. Take a vacation when you dream about your work.

Poisons to be Avoided

51. Avoid poison-containing foods. Tea, coffee, chocolate and cocoa contain poisonous alkaloids which impair digestion, damage the nerves and promote disease of the liver, kidneys and blood-vessels. Cereal beverages and hot or cold fruit juices are wholesome substitutes for tea and coffee.

Condiments—mustard, pepper, pepper-sauce, cayenne, capsicum, vinegar, hot, irritating sauces, and spices of all kinds—must be wholly discarded. They irritate the stomach and cause gastric and intestinal catarrh and gastric ulcer, colitis, and damage to the liver and kidneys.

52. Discard tobacco, alcoholic beverages, "tonic drugs" and other nerve foolers. They are deadly poisons which lessen efficiency and shorten life.

53. Avoid nostrums and patent medi-

cines. The habitual use of any drug is harmful.

54. The best foods in the order of excellence are: fresh, ripe fruits, cooked fresh fruits, cooked dried fruits, nuts, graham bread, rice, zwieback, toasted wheat flakes, potato, cauliflower, carrots, greens and other fresh vegetables, lettuce, cabbage, cucumber, honey, meltose, malted nuts, yogurt buttermilk, sterilized milk and cream, peas, beans, lentils, raised bread, sterilized butter.

55. If "bilious," take several enemas, until the bowels are thoroughly emptied. Drink two or three quarts of water daily. Eat freely of fresh fruits and green vegetables. Avoid fats almost wholly for a few days, and diminish the amount of fats in the regular diet. Discard milk. Make the bowels move three or four times a day.

56. Eat, drink, sleep, exercise,—do all for efficiency. Said Paul, "Whether ye eat or drink, whatsoever ye do, do all for the glory of God."

Biologic Living

A man can do credit to his Creator and make the most of himself only in following the natural order of life intended for him.

Our supreme obligation to obey the natural order is generally ignored. The great biologic laws, under the control of which man has been developed during countless ages, are as immutable and as unescapable as the force of gravitation. The principles which rule our physical being are the most fundamental elements of human life. Most human maladies and miseries are the natural result of our failure to recognize this profound truth. Hunger, thirst, desire for air, sunlight, and other bodily appetites are primitive instincts which, if followed implicitly and rationally, would result in the highest degree of physical vigor and efficiency.

But we pervert every instinct.

We affect habits that are wholly foreign to our biologic requirements and adaptations. Instinct calls us to live in the open. We imprison ourselves in offices, factories

and air-tight bedrooms. The result is the great white plague, tuberculosis.

Instinct calls for water to cool and cleanse the vital machinery. We guzzle beer, wine, whiskey, tea, coffee and other intoxicants, and suffer countless miseries in consequence.

Instinct and biologic law teach us to select a bill of fare identical with that of our cousins, the anthropoids—the chimpanzee, the orang and the gorilla, who with man form the family of primates, one of the most ancient and most remarkable of all animal races. But instead of contenting ourselves with the natural products of the earth—fruits, nuts, soft grains and tender shoots—we have unlawfully and unbiologically invaded the food stores of nearly every other species of animal. We eat fish with the cormorant; wild game with the lion and the eagle; we gnaw bones with the dog and nibble cheese with the larvæ of flies and other insects. We gulp down oysters and clams with the sea gull and the pelican and putrescent meats (prime beef) with the carrion crow and the buzzard, and the result

is universal dyspesia. The human digestive machine cannot deal with such a miscellaneous assortment of foodstuffs. No single stomach can digest the bill of fare of all creation.

Our fundamental adaptations and nutritive needs we cannot change. We must bow to the Omnipotent Forces which made us as we are, and conform our lives to the cosmic order. We must keep step with the music of the spheres to which the old Greek philosophers listened; we must keep ourselves "in tune with the infinite." This is the key to the normal, healthful life.

Simple Remedies for Neurasthenic Miseries

THE treatment of individual neurasthenic symptoms is not in most cases absolutely necessary for the cure of the disease, since the individual manifestations of the malady will gradually disappear as recovery progresses, provided the fundamental causes are removed. Too close attention to individual symptoms sometimes serves to keep them alive. Not infrequently an ache or a pain of some other description which has disappeared and been forgotten by the patient will reappear in full force when brought back to the patient's consciousness by asking him about it.

Nevertheless certain symptoms are sometimes so distressing that attention must be given them. Not infrequently the patient has formed a drug habit of some sort, alcohol, tobacco, coffee, morphia, or some much-vaunted nostrum. The first step toward a

cure must be to get rid of the drug habit, and in accomplishing this, drugless remedies for the relief of the miseries from which the neurasthenic suffers may render most important service. It is important to remember, however, that the symptom is not the disease, and while the relief of the symptom may help toward the control and cure of the disease, other more fundamental measures should be employed, as has been set forth in the preceding pages.

Care must also be taken to avoid exaggerating in the patient's mind the importance of "symptoms." He must be encouraged to set his will at work against morbid "suggestion," so that he may not become "symptom ridden," and to cultivate normality, by constant assertion of his right to be well; and by wholesome, mind-filling diversions and occupations, especially such delightful employments as light farming, gardening, botanizing and other out-of-door occupations. Basketry, weaving, clay modeling, wood sloyd, and other manual arts and crafts, have aided many neurasthenics in

their efforts to get a new grip on life, and to escape from the fetters of chronic invalidism.

The remedies suggested in this chapter are nearly all such as may be employed by any intelligent person in his own home. Notwithstanding their simplicity, they are wonderfully potent and have proved successful in the treatment of many hundreds of cases of neurasthenia of every type and degree.

The symptomatic treatment of neurasthenia which is dwelt upon in this chapter is in no small degree curative as well as palliative. Physiologic remedies afford relief by mitigating or removing causes, and so by repetition become effective as curative measures. The following measures are adapted to all classes of neurasthenics and may be employed as indicated in connection with the more general measures suggested in preceding chapters:

Insomnia

Inability to sleep is one of the most disconcerting symptoms from which the neu-

rasthenic suffers. Long, restless nights exhaust still further his weakened nerve centers, and so aggravate all his sufferings. The temptation to resort to the use of some sleep-producing drug becomes almost irresistible. There may be instances in which the temporary use of a hypnotic is advisable, but the chances are ten to one that the dose of the drug will very soon have to be increased and that later on it will lose its effect and the insomnia will be found to be aggravated.

Fortunately, drugs are rarely necessary to produce sleep, except when general anesthesia is required for surgical purposes. Every case of insomnia may be relieved without the use of sleep-producing drugs. This has been demonstrated a thousand times in the great insane asylums of this and other countries in the treatment of the very obstinate insomnia present in most cases of acute mania.

For particulars of the physiologic methods of relieving insomnia see the chapter on sleep.

Drowsiness

The neurasthenic who cannot sleep at night is often afflicted with an almost irresistible drowsiness during the day, especially after meals. Inability to keep awake in church or at a lecture is not an uncommon symptom. This symptom is especially common in visceral neurasthenics, who often suffer from drowsiness when sitting or standing, but become wide awake on assuming the horizontal position. These persons suffer from lack of vasomotor regulation, and so are at the mercy of gravitation—when upright the blood runs into the dilated abdominal vessels; when horizontal, the blood runs back to the head, so that the brain is alternately drained of blood and overcharged.

In certain cases the drowsiness persists after lying down, doubtless the result of the influence of toxins. After meals absorption is much more rapid than at other times, owing to the greatly increased rate of blood movement through the abdominal vessels, so that the absorption of toxins is greatly in-

creased. When the poisons produced happen to be of a sort which benumb and paralyze the nerve cells, drowsiness and stupor are prominent symptoms.

For the first class of cases the patient should rest in a horizontal position for half an hour or even an hour after meals. For the second class of patients, those who are disposed to sleep lying down, moderate exercise for half an hour after eating is to be recommended. By exercise the heart action is stimulated, the blood-pressure is raised, the action of the lungs, skin and kidneys increased, and so the disturbing poisons are destroyed and eliminated. If the patient yields to the disposition to sleep after meals he falls into a heavy slumber from which he awakens feeling weary, dull and in no way benefited. Deep breathing exercises, light calisthenics, the vibrating chair, abdominal kneading and percussion—all are useful measures.

For temporary relief, bathing the face and neck with very hot or cold water, or with hot and cold water in alternation, are

most efficient measures. Drinking half a glassful of hot water and lying upon the face over a pillow for a few minutes, avoiding sleep, are simple measures which often afford prompt, if temporary, relief.

Mental Depression—the "Blues"

While all neurasthenics are not subject to the blues, or spells of depression, it is perhaps safe to say that persons who suffer much and often from the blues are almost always chronic neurasthenics. Mental depression is one of the many toxic effects from which these patients suffer. The foul breath, coated tongue and loathsome stools noted in these cases are abundant evidence of the toxic origin of the "blues." The adoption of thoroughgoing measures for changing the intestinal flora, and thus suppressing the development and absorption of toxins, is quickly followed by a change in the mental state, which is a delicate indicator of the degree of intensity of the intestinal toxemia.

Tonic baths, cheerful society, the cultivation of an optimistic attitude of mind, are

necessary aids to recovery, which must not be neglected. It is especially important that the patient shall recognize the fact that his mental state is simply a reflection of a physical condition. He must thoroughly understand and appreciate the fact that the "blue devils" which stare him in the face and threaten him with every possible calamity are really nothing more than ghosts and hobgoblins bred by the putrefaction processes active in his colon.

Fully convinced of this important pathological truth he will cease to encourage the morbid mental state by dwelling upon his melancholy vaporings, and much less will he talk of his despondency, except briefly to his physician.

A fit of the "blues" is as much an intoxication as a drunken spree, and a bad attack may disqualify a person for wise and efficient action as thoroughly as alcoholic intoxication. A person subject to the blues should in his most lucid and optimistic moments resolve to make no important decision, and to set a special guard over his

conduct, while under the influence of the flood of poisons to which the condition is due. The real cure for the blues lies in prevention by removing causes.

The best mental remedy for the blues is to turn the face resolutely toward better things and wait for the poison wave to pass over, just as one holds his breath in the surf until the foaming crest has passed on.

When the unbalance is due to a deficiency of muscle juice, an efficient remedy always at hand is exercise. Almost any kind of bodily exercise is good, but those which bring the large muscles of the legs and trunk into active use and set the lungs into full play are of greatest value. The exercise must be vigorous enough to produce perspiration. There is nothing like a good sweat induced by hard muscular work—a fast game of tennis, a tramp in the woods, or best of all, work in the soil in the care of a garden, to dissipate the blues.

Exercise limbers up the sinews of the mind as well as those of the limbs. It is best of all remedies for the sort of depres-

sion which grows out of an idle life and over-feeding.

But there is another form of depression in which the cause is not a deficiency of muscle secretion, but an excess of adrenal secretion, the result of the action of certain poisons.

Fidgets

The nervous sensations of the lower extremities which give rise to constant movement, or so-called "fidgets," are usually removed by such measures as hot and cold applications to the spine, and the cold spinal douche followed by massage, and usually disappear very soon after the patient has begun to improve as a result of general treatment. Very pronounced temporary relief is often secured by applications of the high-frequency current, or so-called static breeze.

Numbness and Other Paresthesias

Many neurasthenics suffer greatly from sensations in the extremities, which give the impressions of impending paralysis, and so become a source of incessant apprehension

and worry. Hot flashes, cold sensations, prickling, smarting, "electric thrills" and a great variety of other perversions of sensation are experienced by certain classes of neurasthenics. While all these symptoms are sometimes experienced by those suffering from organic nervous diseases, their occurrence in neurasthenia has no other significance than a disturbed circulation of the nerve trunks.

Most paresthesias may be relieved, temporarily at least, by very simple measures that any patient can himself apply. One of the most effective means is sponging with very hot water. The temperature of the water should be as hot as can be borne in order to get the best effects. Massage, the neutral bath, a short electric light bath followed by a cold towel rub or a salt glow are very highly effective measures. Electricity, especially the high frequency, is marvelously effective in some cases. A radical cure of these distressing symptoms is only to be found in a thoroughgoing eradication of the fundamental causes of the disease

which may be present in any individual case.

Palpitation of the Heart

This symptom is exceedingly common in neurasthenics, especially in neurasthenic children and youths. The heart movements are sometimes exceedingly violent and very rapid. The writer recalls a case in which the rate of the heart was found by examination with the sphygmograph to be three hundred beats per minute.

A characteristic of the neurasthenic's palpitation is that it is produced by very slight causes, quite insufficient to produce excitement of the heart in well persons. The patient should rest in bed with a cold compress consisting of a folded towel wrung out of cold water over the heart. The bowels should be emptied by an enema at 80° F.

Pseudo-Angina

Neurasthenic patients often suffer from attacks of pain and constriction in the region of the heart and reaching into the left shoulder and arm, sometimes reaching even

to the left leg. When the attack is severe, the distress may be so great as greatly to terrify the patient. The pulse becomes small and feeble, the extremities become cold, the heart beats very feebly, the face is pale and livid. These attacks so closely resemble attacks of real angina-pectoris, the result of degenerative changes in the arteries of the heart, that they are frequently mistaken for this condition. The attack passes off in ten or fifteen minutes. The face becomes flushed with a sensation of heat. The sense of constriction and other distressing symptoms disappear. These attacks are due to disturbances of the vasa-motor centers, causing contraction of the small arteries, an exaggeration, perhaps, of the same condition which in minor manifestations appears as simple coldness of the hands and feet.

Attacks of this kind may be very quickly relieved by a brief application of hot fomentations over the heart. In some cases a fomentation to the back and the neck is more effective, and still more promptly

beneficial in some cases is a short hot full bath. The temperature of the bath should be 100° F. at the beginning and rapidly raised to 105° or 110° F. The duration of the bath should be not more than three to five minutes. Drinking a tumblerful of hot liquid, such as a glass of hot water or hot lemonade, is often very useful.

Mind Wandering

Mental confusion, weakness of the will and general exaggeration of all neurasthenic symptoms are legitimate results of the hypnotic methods in neurasthenia. What the neurasthenic needs in the way of psychopathic treatment is a strengthening of his will by the normal exercise of his own volition. Such education of the will may be accomplished in all cases by the patient himself if he has sufficient resolution and strength of character left to take himself in hand in a thoroughgoing way. In bad cases, however, the aid and advice of a wise physician is necessary.

It is interesting to note the favorable psychic effect of the physiologic method of

dealing with this disease. In carrying out a systematic course of treatment, such as is essential for the best results in pronounced cases, the patient must undergo at every hour of the day some special treatment or execute some task in obeying his physician's prescription. This in itself is an excellent psychic training and has a decided curative effect. The neurasthenic patient who in following the instruction of his physician gets up in the morning and before breakfast takes a cold shower bath, or has an ice rub to his spine or takes a plunge in cool water or a cold spinal douche, receives a psychic stimulus as well as a physical uplift, and each time that he meets his morning appointment, notwithstanding his natural reluctance, he gains a measure of mental and moral control over his impulses and so makes progress toward the reorganization of his mental faculties.

Headache

The headache of neurasthenia is usually toxic in character or the result of loss of sleep. Attacks of migraine, when once be-

gun, cannot be abruptly stopped, although the patient's suffering may be greatly mitigrated and the attack may be abbreviated. The time to cure an attack of migraine is before it begins, and this is true of headache in general. A thorough bowel movement three times a day, a careful adherence to an anti-toxic diet, excluding both milk and eggs as well as meat, are most effective measures for combating so-called "sick headache." In these cases the most important of all measures is change of the intestinal flora. How this is to be done is told in detail elsewhere in this work. Temporary relief from some forms of headache may generally be obtained by alternating hot and cold applications to the back of the neck, or application of heat to the back of the neck and cold to the forehead or vertex. In cases in which the face is pale, hot applications are most effective. When the face is flushed, cold applications are indicated. The same measures are also effective means of relieving neckache and vertex

headache, from which many neurasthenics suffer.

Backache

Backache is usually interpreted to mean some affection of the spine, but this is rarely true. The worst forms of spinal disease are not characterized by pain in the back. The same is true of Bright's disease. Only calculi and inflammations or infections of the kidneys or their surroundings are likely to give rise to pain in the back. There are many forms of backache, some of which are the result of inflammation or other diseased conditions in the pelvis. Neurasthenic backaches may be due to strain upon the sympathetic nerves, resulting from prolapse of the viscera, but in a great majority of cases the pain in the lower part of the back is due to colitis, an exceedingly common condition in neurasthenics. Backache is often due to constipation.

Neurasthenic backaches are generally associated with a sensitive condition of the sympathetic ganglia, as shown by tenderness of the epigastrium when pressure is made

with the fingers; or great sensitiveness is developed by pressure on either side of the umbilicus. It must be remembered also that neurasthenics are likely to be sufferers from rheumatism in some of its forms. Backache may be due to a rheumatic condition of the joint between the sacrum and hip-joint on one or both sides, the "sacro-iliac synchondrosis," or the seat of the rheumatism may be the lumbar vertebræ. The true neurasthenic backache is a reflex pain due to visceral irritation. In such cases the pain often extends to the hips, and is not infrequently felt in the legs, which in such cases are also subject to numb sensations. In these cases colitis is usually present. The pain is most common in the left side because the descending colon is the most common seat of colitis.

How to Relieve Backache

The backache of neurasthenia is generally very promptly relieved by a hot fomentation, or alternating hot and hold applications to the back. The application of light by means of the photophore or the rays of

the arc lamp generally affords very prompt relief. This relief is at first temporary. Daily or tri-daily applications, continued for a few days or weeks, effect a cure by relieving the visceral irritation to which the pain is found to be due.

A hot bath, judicious massage of the back muscles, and local electric applications, especially the application of the high-frequency current, are often effective means of relief.

One of the most useful of all measures for relief of backache in neurasthenics is the abdominal supporter. This is especially effective in the splanchnic neurasthenics, who suffer most when on their feet. Ordinary abdominal bandages are of little use. A supporter, to be effective, must raise the lower abdomen, as may be done with the hands. For this purpose it is necessary that the supporter should be held in place with springs which operate like those of a spring truss. When properly constructed and accurately adjusted, the relief afforded by such a supporter is usually very great.

Eye Tire

Numerous medical writers have laid great stress upon the importance of eye strain as a cause of neurasthenia. Certain writers have even found in eye strain the cause of various mental perversions and eccentricities to which numerous notable persons, artists, poets, musicians and others have been observed to be subject.

A common cause of eye strain is an error of refraction in one or both eyes, of such a nature that the delicate muscle within the eye, which adjusts the lens, is kept constantly at work in correcting, or attempting to correct, the existing defect, and this overworks and congests the eye and so becomes a source of local and even general disturbance.

Another cause of eye strain is want of balance between the muscles which control the movements of the eyeball.

Eye strain, or muscular asthenopia, is due to lack of balance in the muscles which control the eyes. Each eye makes an independent image of the object looked at. For perfect vision it is necessary that these two

images should be fused in one. This is accomplished automatically by the nerve centers which control the movements of the eye in vision.

It will be readily seen that the instantaneous adjustment of the muscles of the eye to produce perfect vision at the constantly varying distances at which objects are recognized is one of the most delicate and finely balanced of all the muscular activities of the body. The disturbance of this eye-balancing function gives rise to what is termed eye strain. When the action of the muscles is not such as to make a perfect fusion of images of objects, two objects are seen instead of one, and the effort to overcome this defect gives rise to pain and fatigue in the eyes and a variety of other symptoms, among which are blurred vision, inability to look long at an object, congestion and smarting of the eyes, headache, sometimes of the most severe type, such as migraine, giddiness and sensation of falling forward. Palpitation of the heart, even melancholia and epilepsy, have been attributed to eye strain.

Other symptoms of eye strain are, chronic inflammation of the lids, inflammation of the structures of the eyeball and even cataract. Giddiness, nausea, vomiting, and even epilepsy, sometimes appear to be due to eye defects.

There are many medical authorities who believe that eye strain is one of the leading causes of neurasthenia. In our own opinion these writers place the cart before the horse. In other words, eye strain is more often a result of neurasthenia than the cause of it. There are several circumstances which confirm this view. An important fact is that the majority of persons who complain of eye strain in connection with neurasthenia have lived a greater part of their lives entirely free from eye symptoms, and by the aid of proper therapeutic measures their symptoms may be made to disappear.

The writer has had under observation a considerable number of persons whose eyes have been operated upon numerous times by eye specialists for relief of eye strain and neurasthenia, but without favorable results.

In a considerable number of these cases complete relief was obtained by the measures recommended in this work, and without any surgical procedures. Inability to use the eyes for any length of time in reading is a common symptom in neurasthenia. The truth seems to be that in many, if not all, cases of eye strain connected with neurasthenia the real fault is in the nerve supply of the eye rather than in the muscles. The lowering of the nerve tone has rendered the eye muscles incapable of maintaining the nice balance required for perfect vision. When the general nerve tone is raised by the application of proper measures the eye symptoms disappear.

Doubtless there are cases in which the nervous disturbance arising from the eye defects is so great as to cause a waste of nervous energy and as a consequence the symptoms of brain-fag and neurasthenia. In every case in which there is reason to suspect eye strain as a cause of nervous exhaustion, a skilled oculist should be consulted, and any eye defects which may be

found present, must be remedied by the use of glasses or by other means.

Bathing the eyes with very hot water is an excellent means of relieving the fatigue experienced by the subject of eye strain. Rest is also important, since much use of the eyes when symptoms of eye strain exist greatly aggravates the local affection and also the general nervous condition. An oculist should be consulted, and after careful tests it may be found possible to secure great relief by the wearing of suitable glasses.

Neurasthenic Ears

It is astonishing how sensitive the ear sometimes becomes in neurasthenic patients, especially neurasthenic women. Slight sounds which are scarcely noticeable by normal people may be to such persons extremely painful. Usually the patient does not suffer when his mind is diverted, and in many cases ears which have been long coddled, to the inconvenience of an entire family or even a whole neighborhood, may lose their sensibility under drastic treatment by exposure to monotonous noises, such as the rattle of

vehicles over a street pavement or the thunder of rushing trains.

The auditory symptoms will disappear with improvement of the patient's condition. Temporary relief may be obtained by tightly stopping the ears with absorbent cotton smeared with paraffin.

Cramps

Cramps in the calves of the legs and other muscular groups, to which many neurasthenics are subject, may be relieved by hot applications and massage. The spasm may be generally interrupted by grasping the limb between the hands and making firm pressure upon the knotted muscle.

Trembling

This symptom is frequently observed in neurasthenics, especially in very pronounced cases. The trembling is usually confined to the upper extremities and has the form of fine short oscillations of the hands and fingers, which is especially manifested when the patient is asked to hold out the hand with the fingers separated. The cold spinal

douche and mechanical vibration are the best remedies.

Cold Hands and Feet

Many neurasthenics suffer almost constantly from coldness and often clamminess of the hands and feet. This symptom is most likely to appear soon after eating. It may also be induced by mental or nervous excitement. The cause is spasm of the blood-vessels of the extremities, due to irritation of the vasomotor centers of the spine. Temporary relief may be obtained by rubbing or by alternating hot and cold applications to the spine. The abdominal supporter sometimes affords complete relief by sustaining the abdominal viscera and thus preventing reflex irritation of the vasomotor centers. The moist abdominal bandage should be worn at night. Fomentations and other hot applications to the abdomen lessen the irritability of the sympathetic centers and are thus serviceable in overcoming this unpleasant symptom.

Sweating Hands and Feet

This symptom is due to disturbances of the vasomotor centers; that is, the centers which control the small blood-vessels. Hot and cold applications to the spine and hot and cold bathing of the hands and feet are very useful palliative measures, but a cure can be accomplished only by removing the cause through the use of the measures outlined in preceding chapters. The disappearance of this symptom is very often one of the earliest indications of improvement.

Heaviness, Pain and Gastric Discomforts after Meals

These symptoms, very frequent in neurasthenics, are best relieved by rest of half an hour or an hour in a horizontal resting position after eating. When the pain is intense, a bag filled with hot water should be applied over the stomach. Deep breathing, with a sand bag resting on the abdomen, is also useful. Some patients find relief by lying upon the face over a pillow for half an hour after meals, taking frequent deep breaths in the meantime.

Fits of Despondency, or the "Blues"

Recent physiologic experiments indicate that the secretions of the thyroid and suprarenal glands produce an effect upon the brain structures which predisposes the mind to fear, worry and depression. Another interesting and very important fact in this connection is that the products of muscle activity produce an opposite effect; thus idleness or neglect to develop the body naturally gives rise to effeminacy, lack of courage in the face of danger, and chronic fear, which manifests itself in the worry habit. In other words, a feeble muscular development predisposes to fear, while the hardihood and physical vigor which accompany well-developed muscles include physical courage and mental fortitude, and hence constitute a most important and efficient protection against fear-thought, and a protection against fear-exciting and worry-producing emergencies.

These interesting studies relating to the physiology of the internal glands have thrown great light upon our mental processes. It is now clearly shown that peace

of mind, mental equipoise, and contentment, are by no means wholly due to psychic or moral influences, but are in fact largely based upon purely physical conditions. Optimism and mental equilibrium are really in large measure dependent upon a nice balance between the adrenals and other internal secretions which are its physiologic complement. When this balance is disturbed, so that the adrenal secretion predominates, mental depression is one of the consequences. It is evident that something more than psychotherapy or mental treatment is necessary for a real cure. The cause must be removed. The excess of adrenalin must be overcome. The balance of the internal secretions must be restored. Let us now consider how this may be done.

A cardinal function of the adrenalin secretion is the destruction of poisons—not all poisons, but especially animal and vegetable poisons, the origin of which may be either external to the body or internal.

Among the active poisons which excite the adrenals to undue activity should be mentioned first of all, tobacco, alcohol, tea and

coffee, and other habit-forming drugs. This is the reason why the free use of these drugs is always followed by depression as soon as the narcotic influence of the drug has passed off. While the immediate or direct effect of the drug lasts, the depression is not felt, because the real condition is concealed by the narcotic influence upon the nerves of sensibility, but when this effect has passed off, the excess of adrenalin in the blood and tissue juices reveals its characteristic effects, and a fit of despondency or "blues" is experienced.

These recently demonstrated facts are of very great practical importance, but other still more interesting and practical facts growing out of laboratory observations referred to, are now to be mentioned.

The poisons above named are introduced into the body by a voluntary act, but there are other poisons still more potent which are generated within the body and which produce their effects in so insidious a manner that until recently their influence has been quite overlooked. These poisons originate

in the colon through the action of germs upon certain elements of the food, causing putrefaction or decay. All foods which putrefy outside of the body will likewise putrefy in the body. Meats, fish and fowl, together with eggs, are the foods which encourage putrefaction in the colon. Undigested remnants of these foodstuffs always find their way into the colon, where they quickly reach a condition of horrible putrescence with the development of a flood of poisons; toxins, ptomaines, with noxious odors and poisonous pigments, which foul the breath, tint the skin a dingy hue; paint brown circles around the eyes and ugly spots upon the hands, and over-stimulate and ultimately wear out the suprarenal capsules.

This chronic toxemia is a necessary consequence of constipation, and explains the almost universal association of the "blues" with constipation. A person whose bowels move three times a day is almost immune against despondency. Optimism is easy when the blood is clean and the internal secretions are in normal balance.

A bad posture, by causing undue accumulation of blood in the abdominal organs, may give rise to abnormal excitation of the adrenals and an excess of their secretion, and so destroy the normal balance. A sedentary life may produce the same result. We all know the "heartening" effect of a brisk walk in the cool, crisp air of a frosty morning.

Loss of sleep, the use of various drugs, and especially the free use of condiments may likewise cause overaction of the adrenals and depression of spirits.

It thus appears that a fit of the blues and, in fact, all forms of despondency are not intangible mental states which may always be cured by an effort of the will, or driven away by some sort of psychologic juggling, but are definite physical states which may be sucessfully combated by rational and readily accessible means.

Dietetic and other measures for combating constipation and autointoxication, and various forms of exercise are fully detailed elsewhere in this work. Here is an excellent prescription for a sudden attack of depres-

sion, or a "blue" spell: Begin at night. Take only fruit for supper, but plenty of it, three or four apples or as many oranges, half a watermelon (do not swallow the pulp), a couple of canteloupes or a big piece of casaba melon.

At bedtime drink one or two glasses of water and take a long warm bath or neutral bath (100° F. for five minutes, then cool to 98° to 94° F., never more nor less). Continue the bath for half an hour or until decidedly drowsy, then dry quickly and go to bed without cooling off. This plan will ensure sound sleep, which is very essential. Sleep at least eight or nine hours, on a sleeping porch or with windows widely opened.

On rising in the morning, exercise until vigorous perspiration is produced. Now take a "surf bath" (see page 95) and row at least a hundred strokes, finishing with the water at pipe temperature. Dry and dress quickly and don't hunt around for the "blue devils." The despondency is gone; *forget it.*

Habits — How Formed and Reformed

THE chronic neurasthenic is handicapped morally as well as mentally. His judgment is biased, his disposition is changed, his whole life, physical, mental and moral, is colored and crippled by his malady. Even his character is modified; often it is seriously damaged. No small part of the bad temper, moroseness, querulousness and other unamiable qualities displayed by men and women is due to the pernicious effects upon the nerve structures of the various poisons that produce neurasthenic states. A very large proportion of the 16,000 suicides committed in the United States every year may properly be regarded as among the unhappy results of neurasthenia. Vicious habits and changes in character, resulting from the morbid conditions associated with neurasthenia, are doubtless responsible for a considerable portion of the matrimonial shipwrecks which land in the divorce courts.

The neurasthenic is the victim of bad habits, and therefore some understanding of habits, and how they are formed, is necessary in order to escape from their bondage.

What is Habit

As ordinarily used, the term "habit" relates to a thought or an act which, through frequent repetition, has come to be performed without the exercise of will power as at first. A moment's consideration will show us that a large proportion of our daily activities is made up of habits. Our modes of expression, our manner of walking, our bodily attitudes when sitting or standing, even when lying or asleep, are the result of habit. The same is true of dressing, eating and largely of our vocations and avocations; in work, in play, in prosecution of business, in the pursuit of pleasure, and even in religion, habit plays a dominant part.

How Habits are Formed

Before this question can be answered, we must know something of the anatomy and physiology of nerves in relation to habits.

First of all we must remember that the body is a machine—the most delicately constructed and the most marvelous of all mechanisms, but still a machine. A machine is a device in which one form of energy is transformed into another. Thus gravitation, revolving a water wheel, which in turn operates a dynamo, forms electricity, which may then be converted into light and heat. A locomotive converts energy stored in the coal into mechanical energy, by which it pulls a train. An automobile is a machine that converts the energy stored in gasoline into mechanical motion. Before the advent of the gasoline engine, which made the automobile possible, when carriages were propelled only by horses, the energy needed for road travel was obtained from corn, hay and oats, rather than from gasoline, and horses were employed as a mechanism for converting the energy stored in food into the energy of mechanical work. Food is fuel. The horse is an animated locomotive. Man is a similar machine, and far superior to any machine made by man.

The best engines are able to utilize only about one-tenth the energy represented in the fuel, whereas the human body has an efficiency three times as great, and makes use of one-fifth to one-third of the energy represented in food.

In a human being there are very many different forms of human activity. Every living cell has its own particular work to do, and is constantly active. The most conspicuous activities of the body, and those which are chiefly concerned in "habit," are those of the nerves and muscles. Five hundred muscles constitute one-half of the weight of the body. The muscles are living magazines of energy, in which is stored up power ready to be released at the command of brain and nerves. The nervous system is made up of units called "nerve cells," many of which send out immensely long thread-like arms of microscopic fineness, and which in passing to the different parts of the body are bound together in bundles known as "nerves," or "nerve trunks." The nerve system of the human being is said to comprise not less than

eleven thousand million of these nerve cells, each one of which is a storage battery of energy. When a muscular act is performed, it is because some muscle or group of muscles has received an inciting shock from these little nerve batteries in the brain or spinal cord. The nerve impulse is to the muscular movement essentially what the spark from the percussion cap is to the gun, or the ignited fuse is to the cannon or torpedo.

The impulses which give rise to movement proceed from the brain or from the spinal cord. In every case both nerve cells and muscles are involved. Voluntary acts proceed from the brain. Several other acts upon which the brain has no control must proceed from the spinal cord. A simple illustration is afforded by the "knee-jerk." If one in sitting places one limb over the other, and then taps the front of the leg just below the knee cap, the foot will be raised forward as in the act of kicking. This act is absolutely involuntary, and cannot be wholly suppressed even by the strongest effort of

the will. The mechanism of the knee jerk is this: by the tap on the front of the leg a sensation is produced, which the sensory nerve carries to the spinal cord. When it reaches the body of the cell which sends sensory filaments into the leg, it is transmitted through another nerve unit to a motor cell, which in turn sends out an impulse to the muscles of the thigh, which contract, thus straightening the leg.

This nerve arrangement from the leg to the spinal cord and back again to the leg is known as the sensori-motor arc, which consists of three parts: the sensory nerve that leads to the spinal cord, the motor nerve which leads back from the spinal cord to the muscles, and a nerve connecting the two. The brain has nothing to do with the knee jerk. This act is wholly under the control of the spinal cord. Only simple movements of this sort are performed by the human spinal cord, but in lower animals very complicated movements are performed. For example, a frog with its brain wholly removed through the amputation of its head, when

placed on the floor will hop if the floor is jarred. If the frog is laid upon its back and a little acetic acid is placed on its abdomen, it will endeavor to wipe the acid off with both its hind feet. If the acid is placed on one thigh it will be rubbed off with the foot of the other leg, but if this leg is held down, the frog will use the foot of the same side in an effort to remove the acid. The animal seems, indeed, to be able to think and will with its spinal cord. The movements are evidently purposive.

In the lower forms of life that possess no spinal cord a very different phenomenon is observed. For example, if the earthworm is cut in two, the hind half wriggles about as though in pain, whereas the front half crawls off as though nothing had happened. As a matter of fact, the head of the earthworm apparently is unconscious that half of its body has gone. With some species of worms the front half will in time grow on a tail, and the hind half a head, with neither worm apparently the worse for the injury. Such an experiment is possible

in the earthworm, because of the extreme simplicity of its nerve-muscular mechanism; but the human brain, with its retinue of servants, muscles, glands and other bodily organs, is a mechanism so incomparably refined and delicate that even a comparatively slight injury may completely disarrange and upset its operation.

Such a muscular action as a knee jerk is known as a "reflex movement." The brain and will take no part in movements of this sort. Movements of this kind are for the most part protective, and may be termed inherited habits. If, for instance, the hand happens to fall against a hot steam coil, it is instantly withdrawn, and without any action of the will. One does not have to think, "My hand is in contact with something hot; I must withdraw it quickly or it will burn," for such a delay would often result in serious injury. Nature has recorded through many generations the results of similar experiences, so that the spinal cord has formed the habit of protecting the external parts of the body from the threatened in-

jury, by reflex movements, without waiting for the slower action of brain cells.

Charles Darwin once tested the power of this protective instinct by attempting to hold his face against the plate-glass of a cage containing a cobra, while the animal struck at him. Although knowing that he was fully protected by the heavy glass plate, he found it impossible to avoid dodging whenever the animal made a quick movement in his direction.

Balancing movements, closing of the eyelids to avoid dust or bright light, coughing and numerous other reflex movements are carried on quite independently of the will.

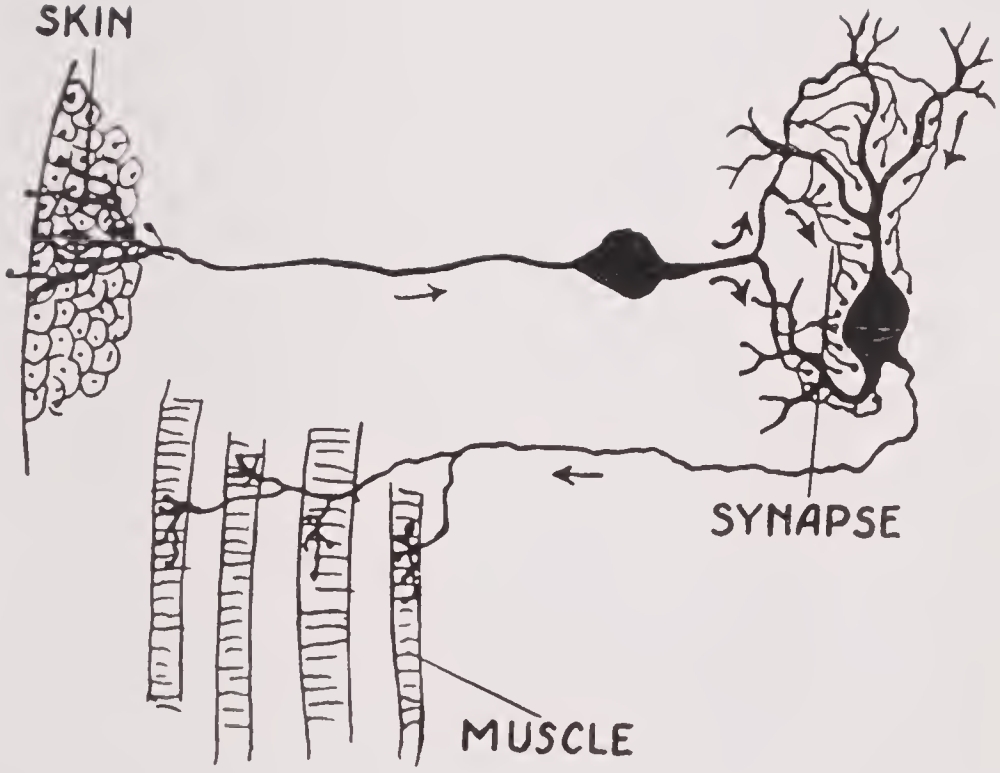
These organic, or inherited habits, while common to all animals, and absolutely essential to our existence, are small in number and very simple in character when compared with the great number of complex habits that constitute a large number of our daily activities, and that may be termed artificial or cultivated habits.

The Synapse

To understand how habits may be cultivated, it is necessary to know about the "synapse." A synapse is a newly discovered miscroscopic mechanism that is found in every sensori-motor arc. The relation of the synapse to nerve action and habit formation explains important brain functions that have not been understood until recent times. The synapse forms the contact between nerve elements. It is through the synapse that one nerve cell communicates with another. An impression starting in the skin and conveyed to the sensory nerve in the spinal cord is passed over to the motor nerve through a synapse. A synapse differs from other parts of the sensori-motor arc in several particulars.

First, impulses can travel through the synapse in only one direction. The impulse, having once passed through, cannot return; the action is irreversible, while in nerve trunks impulses may travel in either direction.

Again, nerves are little subject to fatigue,



A Synapse

while the synapse easily becomes fatigued. Nerves are little affected by narcotics and stimulants, while a synapse is highly sensitive to these poisons.

Finally, the synapse offers resistance to nerve impulses, so that when a nerve impulse comes bounding along the nerve trunk at the rate of four hundred feet a second, on reaching a synapse it is slowed up, or if the impulse is weak, may be stopped completely. A number of repetitions of a feeble impulse may, however, be sufficient to overvome the resistance of the synapse. The resistance of the synapse changes. It seems to lessen with use; that is, if at first a very strong impulse is required to overcome the resistance of the synapse, after a number of repetitions the resistance to this particular impression will be lessened.

In case of the knee-jerk the action is very simple. The impulse passes from the skin along the sensory nerve to the sensory cell, thence through the synapse to the motor cell, thence back to the muscles of the legs, giving rise to the kicking movement. More com-

plicated impressions are not translated into movement by the spinal cord, but are sent up to the brain, where many cells are associated in the determination of the resulting reaction. The final reaction, whatever it is, is the result of the association of many different synapses. The nerve impulse selects in the brain the path of least resistance.

Said the late Sir Michael Foster: "The will, blundering at first in the maze of the nervous network, gradually establishes easy paths. When once this is effected, the slightest impulse seems to start the nerve current along the whole of the associated groups, and produces the habitual action. The nerve current follows this route, not now because it is guided by intelligence, but because this route offers the least resistance from habitual use."

It thus appears that habit is really a training of the synapses of the brain. The results of long-continued training of this wonderful mechanism are to be seen in the marvelous skill of the piano-player, the acrobat, the juggler, and indeed in every skilled trade

and profession. As one author remarks: "The pen of a ready writer seems to dip itself into the ink at the right time, to form of itself all the words, and even to select different words to begin each sentence, and to avoid terminating them with prepositions, while all the time the conscious mind of the writer is deeply occupied with the plot."

Character

Even the character consists very largely of habits. Our conduct is to some degree regulated by our dress, and thus in a sense we may be said to change our character with our clothes. Both our mental and physical life are thus controlled by laws which operate with as much definiteness as do the laws of the physical world. The river obeys the law of gravitation and is guided by its beds and banks; the stream of life is equally controlled by laws.

In an illuminating paper in the *Yale Review,* October, 1914, Professor Frost has well said that "whether consciously or unconsciously, the business of life can be done only in obedience to nerve laws. To pray

for strength to fight the devil, and at the same time to over-eat, under-sleep, to worry, to loll about in stuffy rooms, to force the brain to action when the stomach is replete, to deny oneself the natural cathartics of play and recreation — this is to disinfect the house against yellow fever, and leave the windows open to the deadly mosquito and its poison. Just as knowledge of the plain facts of sanitation is saving lives and health of body today, so will knowledge of nerve laws save lives and health tomorrow. For our splendid nervous systems, complex as they are, work with the precision of fine-wrought mechanism. To comprehend this mechanism is in part to control it. Psychology and physiology are explaining and describing in simple terms what heretofore has been thought mystical and supernatural."

Many advantages are gained by the formation of habits. It is only through formation of habits that exceptional skill can be obtained in any trade or profession. The first time an act is performed it is done

clumsily, in spite of the exercise of the greatest care and attention, but the hundredth or thousandth or ten thousandth repetition of the act may be performed quite unconsciously, and yet with the highest degree of skill.

Mental or physical work to which one is not accustomed quickly induces fatigue, whereas the same work after training induces little or no fatigue. In this way habit formation economizes energy, and renders easy the performance of acts which would otherwise be impossible.

Some interesting observations that have been made indicate that habits may be actually developed or strengthened during periods of inactivity and even unconsciousness. It is a common experience that an act performed with difficulty in the evening is next morning performed with ease; that a new exercise which is executed with difficulty at the first attempt, the next day will be executed easily. The Germans have a saying: "We learn to swim in winter and to skate in summer." Boys who have spent

the summer in learning to swim, find themselves able to begin swimming next season with greater ease and skill than at the close of the previous season.

Every portion of the body develops habits. The habits of the right hand differ from those of the left hand. This is an advantage rather than a disadvantage. It is found that most idiots are ambidextrous.

Disadvantages from the Formation of Habits

While our habits are our servants, they likewise become our masters. A boy at school in sport imitates the stammering of a schoolmate, and himself becomes a stammerer. Such an act as winking the eye, shrugging the shoulders, tilting the head to one side, or contracting the muscles of the face, may develope into a habit "tic," and pass beyond the control of the will.

Evil habits — that is, lying, profanity, stealing, smoking, liquor drinking and other vices — while at first the result perhaps of casual evil association, after a time become

almost as independent of the will as the organic reflexes.

"Uncle Jake," a reformed reprobate who was rescued from the gutter, found himself a victim of involuntary profanity long after he had escaped the thrall of drink and other vices. When told of the fault, he replied: "It swore itself." And doubtless he told the truth.

A reformed safe-breaker who held a position of responsibility and trust during the last twenty years of his life, confessed to the writer that for a considerable time after he was given the position of head night watchman in a large city establishment, he was in constant terror lest his habitual propensity to steal should become overpowering.

Control or Reformation of Habits

Every person who lives is probably more or less in bondage to some habit. Fortunately, most habits are amiable tyrants which do us no harm, and even may be rather a service; but when vicious habits become our masters, escape can be accomplished only by conflict which may be a battle royal.

The formation of habits lessens susceptibility to noise and pain. They also lessen our susceptibility to pleasure, and may even diminish our moral sensitiveness. A wrong act first committed gives rise to great remorse and regret, but after many repetitions it is followed by no compunctions.

A knowledge of the facts that have been presented in the foregoing paragraphs ought to be of considerable assistance to one who wishes to set about an intelligent effort to overcome pernicious habits, and to establish a new order of life. In setting out to accomplish this, it is important to recognize that the more one is controlled by habits, the less is he the real master of himself.

Real self-dominance, the highest state of manhood and womanhood, rises above the tyranny of habit. The slave of habit approaches the animal plane. The lives of animals lower than man are almost wholly controlled by inherited habits that they obey without the exercise of will or intelligence. A starving caterpillar, as shown by Loeb,

will turn deliberately away from food placed before it and crawl toward the light in obedience to an organic instinct. Lower animals are far more at the mercy of their senses than are human beings.

The higher the type of moral and intellectual development, the greater is the independence of sense impressions. In the lower animals the senses are developed to a far greater extent than in man. Wild animals and wild men have much keener senses than civilized man. Insects hear sounds to which human ears are deaf. Dogs live in a world of odors which the human olfactory sense has never discovered. The vulture can see its prey at a distance of twenty miles, and a certain species of moth can smell its mate when three miles away. The comparative feebleness of the senses in man may be an important factor in maintaining that dominance of the intelligence and volition which are essential to human welfare.

Neurasthenic Habits

Neurasthenia rarely fails to leave upon its unhappy victims evidences of its malign in-

fluence, in vicious habits and undesirable transformations of character. Under the influence of neurasthenia, persons who are amiable and of most excellent character become sullen, irritable, vacillating; sometimes dishonest, pessimistic, sensual, intemperate, and the victims of various drug habits. Neurasthenia may be the cause of the growing use of opium, cocaine and other habit-forming drugs. The steady increase in the use of alcohol and of tea, coffee and tobacco, and other habit-producing drugs in most civilized countries must be in a considerable part, in the writer's opinion, attributed to the increasing multitude of neurasthenics found in all civilized lands as the result of a general departure from simple and normal modes of life.

Neurasthenia naturally predisposes to the formation of bad habits through the influence of the numerous toxins which are developed in the intestine, and which become concentrated in the blood as the liver, kidneys, and other eliminative organs gradu-

ally lose their power to destroy and excrete these extraneous toxins.

These intestinal poisons act injuriously upon the brain and mind in two ways. First, certain poisons produce irritation or excitation of the nervous system, thereby lessening the resistance of the synapses; second, other poisons produce depressing or paralyzing defects, lessening the power of the will, so leaving the body a prey to animal impulses which, in many instances, are greatly intensified by the morbid conditions induced by neurasthenia. All drugs which diminish the activity of the higher senses lessen the power of the will, and leave the body subject to the control of the natural reflexes of the animal functions, a frequent result of which is marked changes in the character. Tendencies that have formerly been kept under control by exercise of the will thus become dominant and manifest themselves in ill-temper, anger, envy, and various forms of depravity.

The only cure for vicious habits, no matter how acquired, is to be found in the

formation of new habits. This cannot be done casually, but by a deliberate and well-directed effort. A firm mental decision must be maintained, to correct vicious ways and to bring the body and mind under discipline.

A young woman who had wandered far from the right path was asked by the writer: "How did you succeed in getting out of your evil life?" She said: "When I made up my mind that I must change my life, I took myself in hand." She had found the secret of self-control. To take oneself in hand is necessary for correcting wrong habits. It is useless to wage simple battle against old habits. To do this only keeps constantly active the old combination of nerve elements which exist. New combinations must be made. The synapses must be trained to form new paths and new associations.

The following suggestions are based upon the facts of physiology and the teachings of experience, and if faithfully followed will, the writer believes, render substantial service in the battle which every confirmed neurasthenic must wage to rid himself of the patho-

logical residue that often remains behind in the form of vicious, disagreeable, and undesirable habits after the physical causes of his malady have been removed.

Substitution Habits

First. It must be remembered that the sphere of habit represents an area of mental action in which a sort of automatism has been established, which operates in a large measure independently of the will, even in opposition to it.

If the habit action is of a wholesome and beneficient character, there is a definite gain in this independence of action, in economy of effort. But if the habit action is of a harmful or undesirable character in relation either to oneself or to others, then an effort must be made to bring the recalcitrant territory back under full control of the will. This is the battle to be won.

Suppose, for example, the habit to be suppressed is profanity or harsh, severe expressions on slight provocation. The trouble is, the profane or harsh word has been so often used that it has become incorporated into the

complex of habit reflexes that constitute language, and without which fluency of speech would be impossible. In ordinary speech fluency is the most desirable quality, but fluency in profanity or in the use of harsh expletives makes a blasphemer or a common scold. It is necessary to erect a dam, so to speak, across the stream of impulses which give rise to the undesirable action. One may erect such a barrier by the determination to suppress the undesirable verbal explosions. To accomplish this a new habit must be formed — the habit of pausing a moment before speaking, to consider the form of expression to be used, thus making sure that the undesirable words are eliminated. By this means a resistance is set up which prevents the speech impulses from traveling along the old paths and directs them into new paths.

Synapses that have been so often used that they operate themselves, are like a much-worn gate that swings open with the slightest touch—they open to the slightest stimulation, and must be closed by voluntary

effort, and the energy directed through other synapses, thus forming new paths and establishing in time a new and desirable habit which becomes a substitute for the undesirable one. It must be remembered that the one thing essential for the formation of habit is incessant reiteration of the same act without interruption or change. A single relapse breaks the chain, and the battle must be begun again. Every habit, physical and mental, must be treated on the same plan.

To cure worry, one must cultivate hope. He must deliberately cultivate optimism. He must force his mind into optimistic channels of thought. This can best be accomplished by reading optimistic authors and talking with optimistic people. A very excellent plan is for one to set himself the task of curing some other neurasthenic sufferer from his pessimism, by deluging him with optimistic ideas and expressions. This habit of making mental sunshine for others will in the end produce an optimistic habit of mind, if the physical causes which were originally responsible for the morbid condi-

tion have been corrected, and will become permanent, thus eradicating pessimistic thought habits by substitution.

It is a well-known fact that the best actors often actually experience the emotions which they depict in their acting. Physiologists have often raised the question, Do we laugh because we are happy, or are we happy because we laugh? Stage artists testify that when counterfeiting laughter they often actually experience the thrill of good cheer which normally accompanies the act of laughing. There is indeed the most substantial ground for believing that one may not only form, but reform his habits by deliberately producing through the will such mental and physical activities as are normally associated with mental and physical acts the opposite of those of which it is desirable to rid oneself.

If one feels reticent, unamiable and sullen, he may dissipate the evil spell by assuming an air of cheerful amiability and sociability quite different from his inward feeling, and the result will be that the mask of geniality

will after a time permeate the mind and character, and develop kindred habits of thought and action, and thus effect a cure.

It is, of course, to be understood that these mental remedies must be preceded and supplemented by changes of physical habits, and the remedying of such morbid bodily states as may have conduced to the development or perpetuation of the mental malady.

Neither laughter nor hypnotic suggestion can permanently cure a mental depression due to chronic toxemia. The colon filled with putrefying residues and excretory products must be emptied. The harsh, dry skin must be made supple and active. The toneless muscles must be strengthened by exercise. Every necessary means must be applied for establishing the highest possible standard of health.

On one occasion, as related elsewhere the noted Doctor Abernethy received a call from the famous French wit, Grimaldi, who was at that time every night convulsing great crowds of Londoners with his brilliant humor. Without revealing his

identity, Grimaldi bade the good doctor recommend to him a remedy for the chronic melancholy which made his life miserable. Said the doctor, "You need diversion; go to hear Grimaldi." "Alas," exclaimed the poor man, "I am Grimaldi." Although counterfeit cheerfulness may render great service in combating neurasthenic blues, the application of other remedies aimed at the removal of the fundamental causes must be also employed.

Avoidance of Fatigue

Second. An important fact to which physiology calls our attention is the influence of fatigue on the synapse. Fatigue breaks down its resistance. The natural consequence is to weaken the resistance which the will is able to set up to the formation of undesirable contacts which result in wrong and unwise acts; at the same time the synapses through which these acts are excluded, having also lowered resistance, facilitate the actions which should be repressed, and which under ordinary conditions the will can and

does repress. The state of fatigue is thus a state of danger.

A countless number of physical, mental, and moral disasters are a consequence of this weakening of the resistance of the will and opening of the doors of impulse which results from fatigue. To the tired brain, facts appear distorted. Values are displaced, sanctions are ignored, resolutions are forgotten, good intentions fly to the winds, impulse is in the ascendency, the senses predominate. The depression of fatigue, through harassing cares and loss of sleep, has in thousands of instances led to suicide, by a development of a momentary insane impulse to self-destruction. A multitude, perhaps one might safely say a large proportion, of crimes against persons and property, sexual crimes and moral obliquities of every shade and degree, may rightly be attributable to the will-weakening, resistance-lowering, mind-clouding influence of fatigue.

The tired child is petulant. The tired mother often scolds. The tired father may be morose and grouchy. The tired-out

committee wrangles. Exhaustion is the foe of sociability, good-fellowship, good cheer and virtue.

If this be true, it is evident that the neurasthenic, who is in a state of chronic exhaustion and fatigue, from which he never for one moment escapes, is in imminent danger; every one of his interests is imperiled, and not infrequently the interests of others are jeopardized, wrong judgments are formed, wrong decisions are made, unpleasant words uttered and unwise actions performed. It is highly important that a neurasthenic should be made acquainted with these facts, so that he may set a double watch upon himself, and, so far as possible, in his most lucid moments surround himself with barriers and protective influences against the untoward effects of his malady.

With most neurasthenics there are some periods in the day—with some the morning, with some the evening, with still others the middle portion of the day—when for an hour or more the cloud seems to be lifted, and things wear a normal aspect. Then the

fog bank rolls back again, and all is changed. The neurasthenic who carries burdens of responsibility must deliberately plan as far as possible to make his decisions and form his plans of action during this lucid interval. If no such interval occurs, then it is necessary courageously to face the fact that one is incapacitated for the performance of any responsible duties, and must separate himself from such obligations until restored to a normal state. To do this sometimes requires more decision of character and more effort of will than the will-weakened, character-deformed neurasthenic possesses. In such a case friends must intervene, and, most important of all, a wise physician must by judicious counsel and direction and, if necessary, by the exercise of all the authority which he can assert, secure the consent of the invalid to withdraw from business or professional activities and devote himself to the task of rehabilitating his crippled body and his shattered nerves.

Procrastination is Fatal

Third. Physiologists have demonstrated that nerve impulses may travel in either direction along nerve trunks. Nerves have been transplanted, and may operate in a reverse direction. Motor nerves have even been made to serve for conducting sensations; but the function of the synapse is clearly defined—it allows an impulse to pass in one direction only. It acts, in fact, exactly like a check valve. The nerve current can pass by, but cannot return, so it is necessary to stop at the very beginning the impulse which starts the wrong action. To accomplish this the mind must be ever on the alert. If it is a matter of speech, one must follow the example of the one of old, who said: "I will keep my mouth with a bridle."

An evil habit cannot be trifled with. It must not be allowed the least quarter. One must obey the Bible injunction to "flee these things." It is already shown that this is especially important when one is in a state of fatigue; and since the neurasthenic is al-

ways fatigned, it is of the highest importance that he should deliberately plan to make his environment such as to be strongly helpful in the right direction.

Never Surrender

Fourth. In the formation of new and good habits, the only means by which vicious habits can be overcome, the neurasthenic should not be discouraged if the first attempts are not successful. Physiology shows that by repetition of stimuli the resistance of the most refractory synapses may finally be broken down. If it seems a hard task, for example, to form the habit of cheerfulness, of optimistic thought and speech, of sociability, of mental purity, encouragement may be found in the fact that repetition of the effort will certainly conquer at last; but the efforts must be persistent and insistent. Right thought leads to right action; if one closes the eyes while looking at the side wall of a room, and then thinks of a window on his right, on opening his eyes they will be found to be directed toward the window.

Physiologists have shown that when one thinks of the movement of leg, for example, even though no movement is executed, the muscle fills with blood in obedience to the thought, and thus prepares itself for the expected action. Hence, it is essential that thought habits, as well as overt acts, should conform to the standard to which one seeks to attain.

Eliminating the Poisons

Fifth. Physiologists have shown us that poisons influence the synapse to a powerful degree, although they may have little effect on the nerve trunks. Clinical observations show that this is just as true of the poisons generated in the colon as it is of alcohol, tobacco, opium, and other drugs which may be introduced into the body. Indeed, many of the poisons generated in the colon possess a degree of virulence that is scarcely approached by the extraneous poisons with which we ordinarily come in contact. Some of these poisons closely resemble the venoms of the most poisonous snakes and insects. In most minute quantities they produce tre-

mendous nerve disturbances, by their effects upon the synapse. Laboratory experiments have shown that these colon poisons are fatigue poisons; that is, when absorbed into the circulation they produce all the effects of fatigue, even when no effort has been made. This is the reason why the neurasthenic is tired and exhausted, even though he has not worked.

Neurasthenia, as elsewhere shown in this work, is very rarely, if ever, the result of excessive effort. It is sometimes the consequence of deficient sleep and prolonged worry, but in the vast majority of cases the writer is convinced that the real cause of neurasthenia is to be found in the chronic intoxication resulting from absorption of putrefaction poisons from the colon, which influence the body as would a powerful drug injected into the circulation.

It is evident, then, that the battle against pernicious neurasthenic habits must begin with the cleansing of the system from the disturbing poisons. The bowels must be kept thoroughly cleansed. First, by proper

diet, meats of all sorts and other putrefying food substances being excluded. The bowels must be made to move three times a day. A sufficient amount of bulky food material must be taken to stimulate normal bowel action and complete colon emptying. Water must be taken freely, usually to the extent of two or three quarts a day, to wash the tissues thoroughly and so keep the blood fluids free from body poisons.

A considerable amount of vigorous out-of-door exercise should be taken daily, to stimulate the vital forces to burn up toxic material.

Light sweating baths, the electric light bath, sun baths, swimming, exercise, exposure of the body to light and air in the out-of-door gymnasium; an abundance of sleep (eight to ten hours always in fresh air), the morning bath, and all other measures conducive to the development of vigorous physical health, must be persistently and faithfully employed.

"Forgetting the Things That are Behind"

Sixth. Finally, the neurasthenic must "forget the things that are behind" and press on to better things. No possible good can be done by dwelling on miseries. Every reiteration of a depressing or pernicious train of thought, as well as every repetition of a harmful act, does the character damage, and leaves its impress on the brain. The reforming of habits is a reformation of character. It is encouraging to note that character is not a thing inherited, nor a product of casual circumstance, but is the result of one's own efforts. One makes his own character by the voluntary training or neglect of such training of his synapses. If character has become deformed and damaged by neglect, the natural result of ignorance of one's responsibility in this matter, the synapses may be re-educated and the character reformed by persevering effort in the various ways which have been pointed out.

Christian Science, the Emmanuel Movement, hypnotism, and all forms of sug-

gestion have doubtless rendered service to many neurasthenic sufferers in the struggle to eliminate undesirable habits or traits of character. In all these methods, however, there is one highly pernicious element: The patient is made to believe in the power of another human mind to influence or control his own by occult means, and thus his confidence in his own power, his respect for his own will, his own manhood, is lowered. The neurasthenic needs help in the opposite direction. If he finds himself faltering in the struggle, he may properly seek such aid as may be obtained through human sympathy and association; but for substantial assistance the only really reliable source is to be found in religion, by which the writer means, not theology, or dogma, or sect, or superstition, but simple belief and trust in a beneficent, all-wise, ever-present Power, the source of life and intelligence, that not only creates, but sustains and maintains, repairs and heals—a living Presence that animates and vitalizes every cell, which keeps the heart beating while we sleep, and, in the

words of the old prophet, "wakens us morning by morning." This great Power, which made us and keeps us in life, is an inexhaustible source of strength upon which the weakened neurasthenic will may draw for help; a Power which is ever ready to minister to the "mind diseased," co-operating with which the most despairing neurasthenic may triumph over his gloom and despair, and find light, comfort and peace.

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